

U-matic

VIDEO CASSETTE PLAYER

VP-7040



**VIDEO EQUIPMENT
RENTALS**
GLENDALE, CALIFORNIA
1-800-794-1407

SONY[®]

SERVICE MANUAL

SPECIFICATIONS

System

Video recording	Rotary 2-head helical scan
Luminance	FM recording
Color signal	Down-converted subcarrier recording
Video signal system	CCIR standard, PAL or SECAM color EIA standard, NTSC ^{4.43} color

Video

Output	
VIDEO OUT	BNC type ×1 1.0 Vp-p ±0.2 Vp-p, 75 ohms, unbalanced, negative sync
TV	8-pin type ×1
Sync	
SYNC IN	BNC type ×1 2.5 V (1 – 5 V) p-p, 75 Ω, unbalanced, negative sync
Horizontal resolution	250 lines
Signal-to-noise ratio	More than 45 dB

Audio

Output	
LINE OUT CH-1, CH-2	RCA type phono jack ×2 –5 dB (47 k-ohm load)
AUDIO MONITOR	RCA type phono jack ×1 –5 dB (47 k-ohm load)
TV	8-pin type ×1
Signal-to-noise ratio	More than 50 dB at 3% distortion (channels 1 and 2)
Frequency response	50 – 15,000 Hz (channels 1 and 2)

Special functions

Pause	Still picture, with automatic long pause function
Search	About 5 times normal speed in both directions
Tracking control	Possible
Skew control	Possible
Dropout compensator	Built-in

Tape transport

Tape speed	95.3 mm/sec (3 ³ / ₄ inches)
Playback time	Approx. 60 min (with KCA-60K)
Fast forward, rewind time	Within 4 min (with KCA-60K)
Wow-and-flutter	Less than ±0.23% p-p (DIN)
Tape format	U-matic video cassette
Tape type	KCA, KCS, KSP cassette

General

Power requirements (For EK)	AC 220 – 240 V 50/60 Hz
Operating voltage (For EK)	AC 198 – 264 V
Power requirements (For UC)	AC 100 – 120 V 50/60 Hz
Operating voltage (For UC)	AC 90 – 132 V
Power consumption	58 W
Operating position	Horizontal
Storage temperature	–20°C to +60°C (–4°F to +140°F)
Operating temperature	5°C to 40°C (41°F to 104°F)
Dimensions	Approx. 424 × 192 × 492 mm (w/h/d) (16 ³ / ₄ × 7 ⁷ / ₁₆ × 19 ³ / ₈ inches)
Weight	Approx. 16 kg (35 lb 4 oz)
Supplied accessory	RF modulator compartment cover (1) AC power cord (1)

Recommended Video Equipment and Accessories

Frame Code Generator FCG-700
 Color video monitor Sony CVM, PVM series
 Computer Interface Board BKU-701
 33-pin remote control board BKU-702
 Remote control unit RM-770, RM-500, RM-580
 Auto Search Control Unit RX-707, RX-353CE, RX-303CE
 Video/audio distributor DA-500
 Video/audio switcher VCS-500
 VTR selector RM-V5
 RF modulator kit RFK-660UCE/660UB/660UF/660CH
 Cleaning cassette KC-1C
 Rack mount kit RMM-507

TABLE OF CONTENTS

1. GENERAL DESCRIPTION

1-1.	Features	1-1
1-2.	Location of Parts and Controls	1-3
1-3.	Connection	1-7
1-3-1.	Connection to a Video Monitor	1-7
1-3-2.	Connection to an Audio/Video System ...	1-7
1-3-3.	Connection to a TV Set	1-8
1-3-4.	Connection to a Timer Playback	1-8
1-4.	Installing the RF Modulator	1-9
1-5.	Operation	1-9

2. SERVICE INFORMATION

2-1.	Removal of Cabinet	2-1
2-2.	How to Service the Printed Circuit Board	2-3
2-2-1.	VA-57A Board	2-3
2-2-2.	PD-40A Board	2-3
2-3.	Main Parts Location	2-5
2-3-1.	Location of the Printed Circuit Board	2-5
2-3-2.	Location of the Mechanical Main Parts/Components	2-7
2-4.	Printed Circuit Board	2-9
2-5.	Connectors	2-9
2-6.	Output Signal of the Connector	2-9
2-7.	Spare Parts	2-10
2-8.	Select Switch Setting	2-10
2-9.	How to Operate the Machine without Installing a Cassette Tape	2-10
2-10.	Cassette Removal Procedure when Normal Ejection is not Possible	2-11
2-11.	Diagnostic Function in System Controller	2-12
2-11-1.	Outline of Self Diagnosis	2-12
2-11-2.	Diagnosis Method	2-12
2-11-3.	Troubleshooting	2-13
2-11-4.	Diagnosis List	2-14
2-11-5.	Mode Conversion Diagram and Timing Chart	2-18
2-12.	Safety Check-Out	2-35
2-13.	Fixture	2-35

3. PERIODIC CHECK AND MAINTENANCE

3-1.	Maintenance after Repairs	3-1
3-2.	Periodic Check	3-1
3-3.	Others	3-1

4. REPLACEMENT OF MAJOR PARTS

4-1.	Replacement of the Upper Drum	4-1
4-2.	Replacement of the Drum Assembly	4-2
4-3.	Replacement of the Capstan Motor	4-3
4-4.	Replacement of the CTL Head	4-3
4-5.	Replacement of the S Drawer Roller	4-4
4-6.	Replacement/Adjustment of the Tape Guides on the Threading Ring	4-5
4-7.	Replacement of the Audio/CTL Head	4-6
4-8.	Replacement of the Threading Ring	4-7
4-9.	Replacement of the Pinch Roller	4-8
4-10.	Replacement of the Threading Gear Box System	4-8
4-10-1.	Replacement of the Threading Gear Box	4-8
4-10-2.	Replacement of the Threading Motor	4-9
4-10-3.	Replacement of the Threading Belt	4-10
4-11.	Items to be Adjusted after Main Parts Replacement	4-11

5. LINK AND DRIVE SYSTEM ALIGNMENT

5-1.	Reel Table System Adjustment	5-1
5-1-1.	Cassette Holder Position Adjustment	5-1
5-1-2.	Reel Table Height and Vertical Play Adjustment	5-2
5-2.	T Drawer Arm Adjustment	5-4
5-2-1.	T Drawer Arm EJECT Position Adjustment	5-4
5-2-2.	Unthread-end Switch Position Adjustment	5-4
5-3.	Threading System Adjustment	5-5
5-3-1.	Threading Ring Rotation Adjustment	5-5
5-3-2.	Gear Box Installing Position Adjustment	5-6
5-3-3.	Pinch Roller Self Alignment Adjustment	5-7
5-3-4.	FR Detector Block Installing Position Adjustment	5-8
5-4.	Pinch Lever Block Adjustment	5-9
5-4-1.	Pinch Lever Preset Adjustment	5-9
5-4-2.	Pinch Roller Preset Adjustment	5-10
5-4-3.	Pinch Solenoid Block Position Adjustment	5-11
5-5.	T Tape Sensor Position Adjustment	5-12
5-6.	Tension Arm System Adjustment	5-13
5-6-1.	S Drawer Roller Block Limiter Adjustment	5-13
5-6-2.	T Tension Regulator Operating Position Adjustment	5-13
5-6-3.	S Tension Regulator Operating Position Adjustment	5-14
5-6-4.	Tension Detector Position Adjustment	5-15
5-6-5.	T Tension Regulator Arm Height Adjustment	5-16
5-7.	Search Solenoid System Adjustment	5-17
5-7-1.	Search Solenoid Installing Position Adjustment	5-17
5-7-2.	T Idler Solenoid Position Adjustment	5-18
5-7-3.	S Idler Solenoid Position Adjustment	5-19
5-7-4.	Pinch Solenoid Installing Position Adjustment	5-20
5-7-5.	T Brake Solenoid Position Adjustment ...	5-21
5-7-6.	S Brake Solenoid Position Adjustment ...	5-22
5-8.	Cassette-up Compartment Adjustment	5-23
5-8-1.	Cassette-in Switch Position Adjustment	5-23
5-8-2.	Cassette-down Switch Position Adjustment	5-24
5-9.	Leaf Spring Position Adjustment	5-25
5-10.	Pinch Lever Azimuth Adjustment	5-26

6. BACK TENSION AND TORQUE ALIGNMENT

6-1.	Brake System Adjustment	6-1
6-1-1.	S Brake Torque Adjustment	6-1
6-1-2.	T Brake Torque Adjustment	6-2
6-1-3.	REW Brake Torque Adjustment	6-3
6-2.	F FWD/REW Torque Adjustment	6-4
6-3.	FWD Torque Adjustment	6-5
6-4.	REV Torque Adjustment	6-6
6-5.	F FWD Back Tension Adjustment	6-7
6-6.	FWD Back Tension Adjustment	6-8

7. TAPE RUN ALIGNMENT

7-1.	F FWD/REW Modes Tape Path Adjustment	7-1
7-2.	T Correction Guide Slantness Adjustment	7-2
7-3.	PLAY Mode Tape Path Adjustment (1)	7-2
7-4.	PLAY Mode Tape Path Adjustment (2)	7-3
7-5.	REV Mode Tape Path Adjustment	7-4
7-6.	Tape Path Adjustment Around Pinch Roller	7-5
7-7.	Tracking Adjustment	7-6
7-7-1.	Video Tracking Adjustment	7-6
7-7-2.	CTL PB Head Height/Azimuth/Zenith Adjustments	7-10
7-7-3.	Audio Head Height Adjustment	7-12
7-7-4.	Audio Head Zenith Adjustment	7-13
7-7-5.	Audio Head Azimuth Adjustment	7-13
7-7-6.	Audio Head Phase Adjustment	7-14
7-7-7.	Audio/CTL Head Position Adjustment	7-14
7-8.	Video Head Dihedral Adjustment	7-15

8. POWER SUPPLY/SYSTEM CONTROL ALIGNMENT

8-1.	Switching Regulator Adjustment	8-1
8-1-1.	REG + 12 V Adjustment	8-1
8-2.	Tape Sensor Balance Adjustment	8-2
8-3.	Reel Motor Still Adjustment	8-2

9. SERVO SYSTEM ALIGNMENT

9-1.	CTL Head Position Adjustment	9-2
9-2.	Capstan Free Speed Adjustment	9-2
9-3.	Capstan Search Speed Adjustment	9-2
9-4.	Capstan Stop Servo Adjustment (1)	9-3
9-5.	Capstan FWD/REV Detection Adjustment	9-3
9-6.	Capstan Stop Servo Adjustment (2)	9-4
9-7.	Tracking Multi Adjustment	9-4
9-8.	Drum Free Speed Adjustment	9-5
9-9.	Drum AFC Level Adjustment	9-5
9-10.	Drum AFC Transient Adjustment	9-6
9-11.	Instant Start Adjustment	9-6
9-12.	Switching Position Adjustment	9-7

10. AUDIO SYSTEM ALIGNMENT

10-1.	Audio Head Position Adjustment	10-2
10-2.	Audio Playback Frequency Response Adjustment	10-2
10-3.	Audio Playback Output Level Adjustment	10-2

11. VIDEO SYSTEM ALIGNMENT

11-1.	Noise Canceller Adjustment	11-2
11-2.	High Component Mix Adjustment	11-3
11-3.	RF Frequency Response Adjustment	11-4
11-4.	Dropout Compensation Sensitivity Adjustment	11-4
11-5.	RF Balance/Level Adjustment	11-5
11-6.	Chroma Demodulator Adjustment	11-5
11-6-1.	ACC Level Preset	11-5
11-6-2.	Reference 4.43 MHz Adjustment	11-6
11-6-3.	VCO DC Level Adjustment	11-6
11-6-4.	APC Gain Adjustment	11-6
11-6-5.	5.12 MHz Tuning Adjustment	11-6
11-6-6.	ACC Level Adjustment	11-7
11-6-7.	Converter Balance Adjustment	11-7
11-6-8.	Y Output Level Adjustment	11-8
11-6-9.	Chroma Mix Level Adjustment	11-8
11-6-10.	Video Level Adjustment for BKU-701	11-8

12. BLOCK DIAGRAM

Overall	12-1
Video System	12-4
Audio System	12-7
Servo System	12-9
System Control	12-11

13. SEMICONDUCTOR ELECTRODES 13-1

14. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

Circuit Function of the Printed Circuit

Board	14-1
Location of the Printed Circuit Board	14-2
VA-57A	14-5
SV-93D	14-23
KY-105D	14-38
SY-106B	14-52
PD-40A	14-64
PH-5, PTC-35	14-66
PD-41	14-67
PTC-35, RM-39, SE-46, TG-22	14-69
CC-31, CC-32, CC-33, LP-41	14-70
DC-31B	14-73
DC-31C	14-75
435-A	14-77
UR-14	14-79
UR-14E	14-83
FRAME	14-88

15. SPARE PARTS AND FIXTURE

15-1.	Parts Information	15-1
15-2.	Exploded View	15-1
	Reel Chassis (1), Supply Side	15-3
	Reel Chassis (2), Take-up Side	15-5
	Reel Chassis (3), Back Side	15-7
	Threading Ring Block	15-9
	Threading Arm	15-11
	Drum and Capstan Blocks	15-13
	Erase Head Base	15-15
	Pinch Lever and Pinch Solenoid Blocks	15-17
	Cassette-up Compartment Block	15-19
	Function Control	15-21
	Front Panel Block	15-23
	Chassis Block (1), Left Side	15-25
	Chassis Block (2), Back Side	15-27
	Level Control Panel	15-29
	Switching Regulator	15-31
	Connector Panel	15-33
	Chassis Block (3), Bottom	15-35
	Ornamental Panel Block	15-37
15-3.	Electrical Parts List	15-39
15-4.	Packing Material and Accessories	15-61
15-5.	Fixture	15-61

SECTION 1

GENERAL DESCRIPTION

1-1. FEATURES

Compact, lightweight design

Many versatile features are provided in a compact, lightweight package. Thanks to its small footprint, the VP-7040 can be set up almost everywhere and rack installation is easily possible.

Programmed operation

Any desired point on the tape can be quickly located. A specific section may be played back repeatedly.

Remote control and auto search

The optional BKU-702 33-pin remote control board permits the remote control of the VP-7040, and the auto search for any desired point. With an optional remote control unit such as RM-580, RM-500, the machine can be remotely controlled through the 33-pin REMOTE connector. Any point on the tape can be searched for and played back automatically using an RX-353CE or RX-303CE auto search control unit.

RS-232C interface option

The optional BKU-701 computer interface board offers an RS-232C link that can be used for example to operate the player by connecting the RX-707 auto search control unit or other devices equipped with an RS-232C interface.

LED counter shows tape position

The tape counter uses the CTL signal on the tape for precise playing time indication in minutes and seconds. If the optional BKU-701 computer interface board is installed and the tape contains frame code (absolute address) information, this information can be used to display the tape position.

Other features

- . Search in both directions at about 5 times normal speed.
- . Long pause function for tape protection.
- . AUTO OFF indicator shows moisture condensation.
- . Overall easy operation.

1-2. LOCATION OF PARTS AND CONTROLS
FRONT PANEL

Cassette compartment

TRACKING control
Normally, set this control to the center (FIXED) position.

Indicators

AUTO OFF	Lights to indicate internal moisture condensation.
STANDBY	Lights while tape is being threaded or unthreaded.
FRAME CODE	Lights when a tape on which frame code has been recorded is played back with a BKU-701 attached to the unit.

AUDIO MONITOR selector
Selects the audio channel for video monitoring. The setting does not affect the AUDIO LINE OUT jacks.

CH-1	Sound of channel 1 only
MIX	Mixed sound of channels 1 and 2
CH-2	Sound of channel 2 only

SYSTEM SELECT switch
Selects the video signal system recorded on a videocassette.

NTSC	Using the EIA standard NTSC4.43 color system.
PAL	Using the CCIR standard PAL color system.
SECAM	Using the CCIR standard SECAM color system.

Tape operation buttons and indicators
EJECT ▲
STOP ■
REW ◀◀ (rewind)
PLAY ▶▶ (playback)
F. FWD ▶▶▶ (fast forward)
PAUSE ||

SEARCH buttons and indicators
REV ◀ (Search in reverse direction)
FWD ▶ (Search in forward direction)

PROGRAMMED OPERATION selector

	For repeatedly playing and for checking point memorized by the MARK IN A and B button.
OFF	For normal playback. For memorizing the points on the MARK IN A and B button.
	To stop the tape at the point where the MARK IN A button was pressed. If nothing is stored on the MARK, the time counter 00:00 position is located.

MARK IN A, B buttons
By pressing a button, the counter indication at that point is stored in memory. When a button was pressed repeatedly, the last point is stored.

SKEW lever
Normally, set this lever to the center position.

POWER switch

TIMER switch
Except when wishing to activate playback with an external timer, this switch should be set to OFF.

RESET button

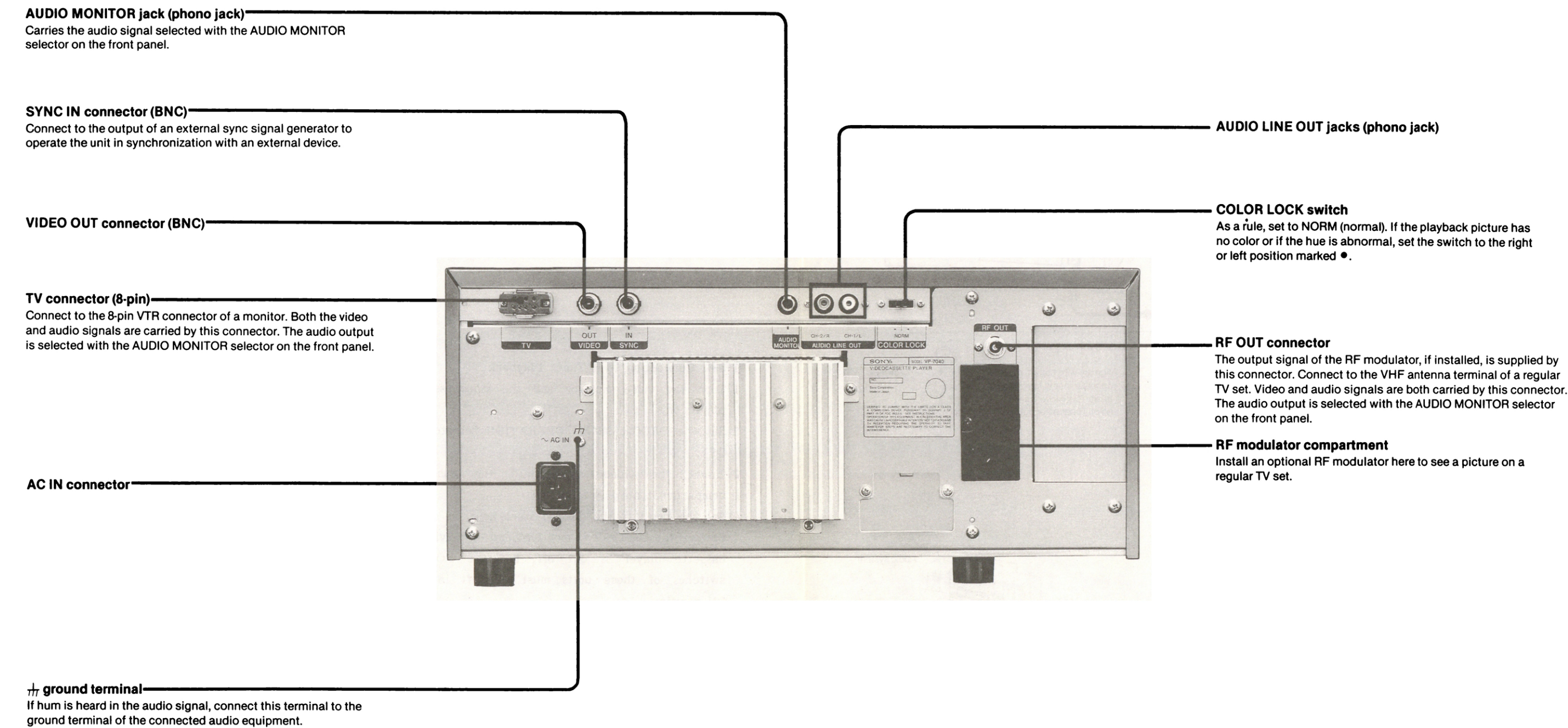
PROGRAMMED OPERATION selector setting	RESET button function
OFF or	Resets the time counter to 00:00 and clears the MARK IN A, B button memory.
	When kept depressed for more than 2 seconds, the total accumulated operation time of the head drum is shown in 50-hour increments.

REMOTE connector (special minijack)
Connect the optional RM-770 remote control unit.

Time counter and FRAME CODE/CTL selector
Normally, the CTL signal count is used to display the tape playback time in minutes and seconds (relative indication). When the optional BKU-701 is installed and a tape which contains frame code information is played back, the selector operates as follows.

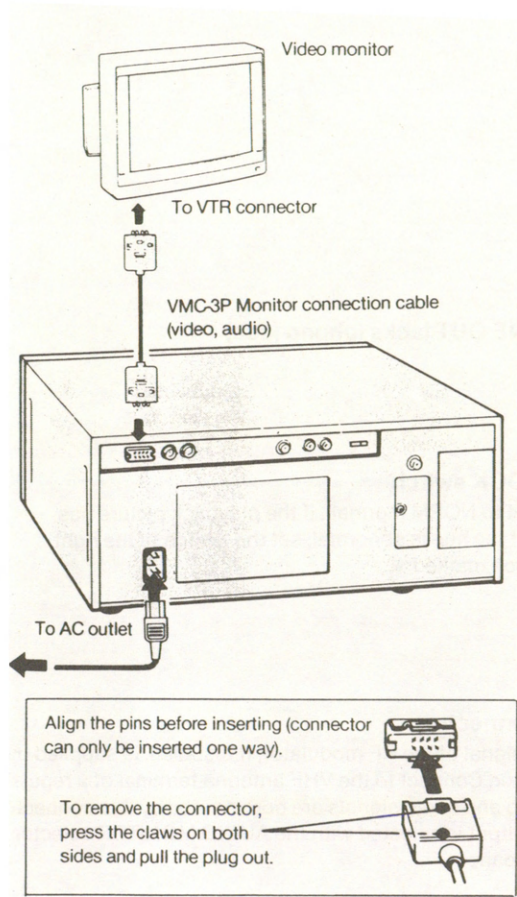
Selector position	Counter display
FRAME CODE	Frame code (absolute position)
CTL	Playing time

REAR PANEL

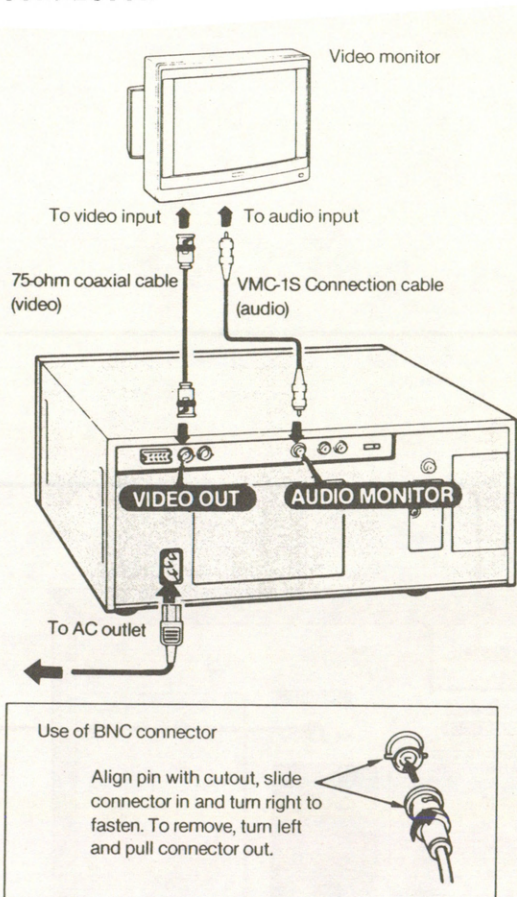


1-3. CONNECTION

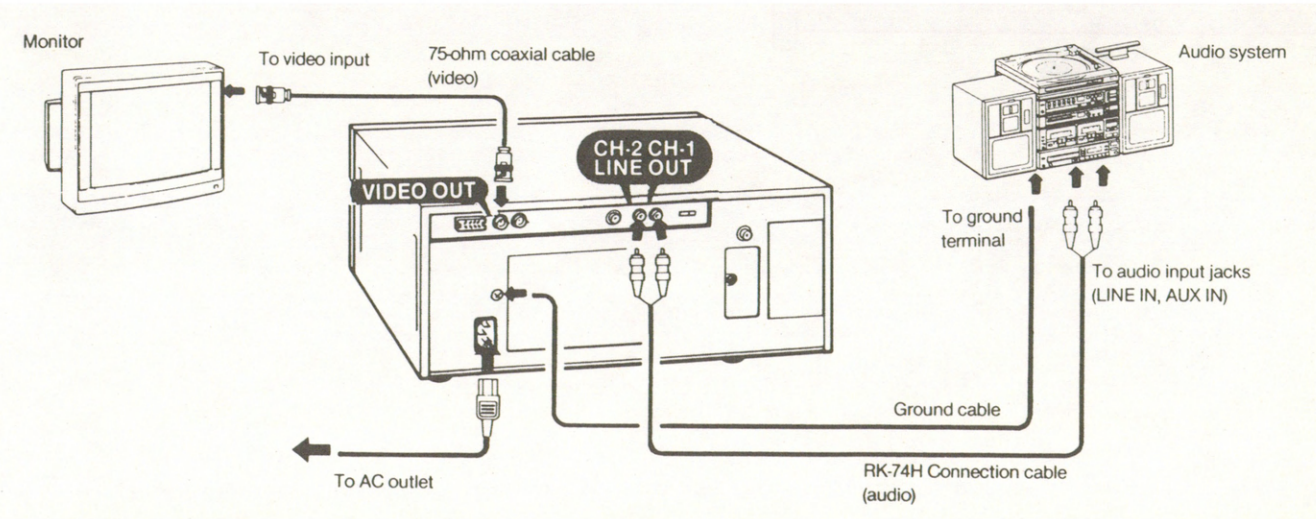
1-3-1. Connection to a Video Monitor
MONITOR WITH 8-PIN VTR CONNECTOR



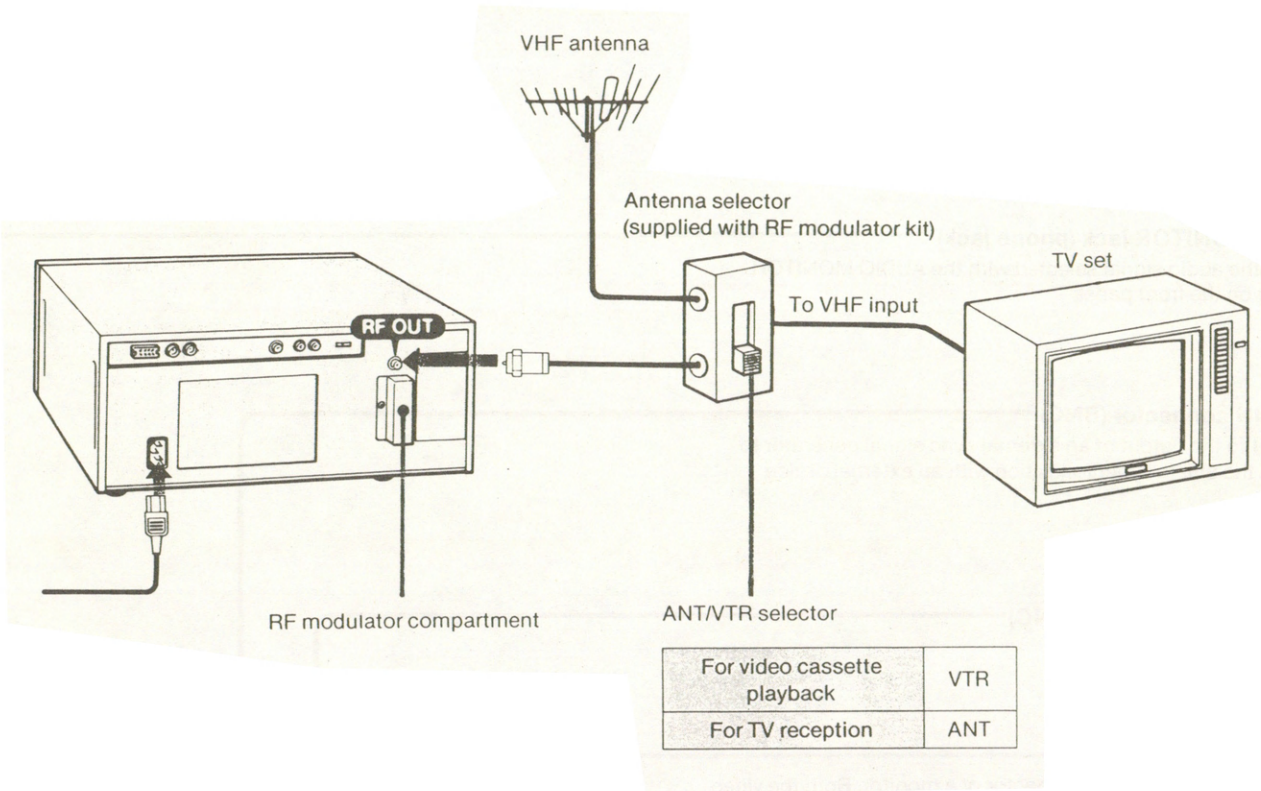
MONITOR NOT EQUIPPED WITH 8-PIN VTR CONNECTOR



1-3-2. Connection to an Audio/Video System

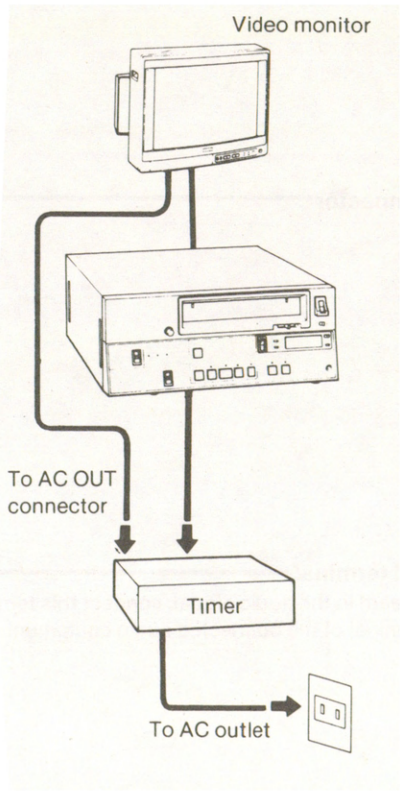


1-3-3. Connection to a TV set



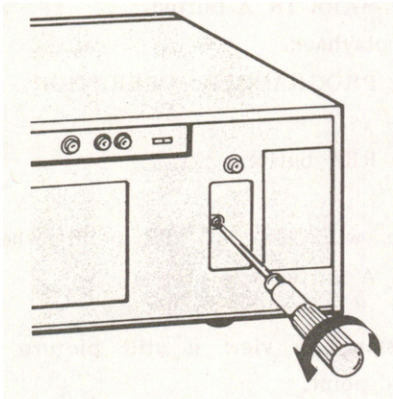
1-3-4. Connection to a Timer Playback

- 1 Turn the video monitor and the videocassette player on.
- 2 Set the PROGRAMMED OPERATION selector to OFF.
- 3 Insert the videocassette into the cassette compartment until it stops.
- 4 Set the timer to the desired start time. Power to the video monitor and the videocassette player is cut off, but the POWER switches of these units must be left in the ON position.
- 5 Set the TIMER switch to PLAY.

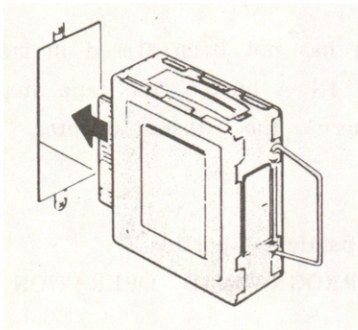


1-4. INSTALLING THE RF MODULATOR

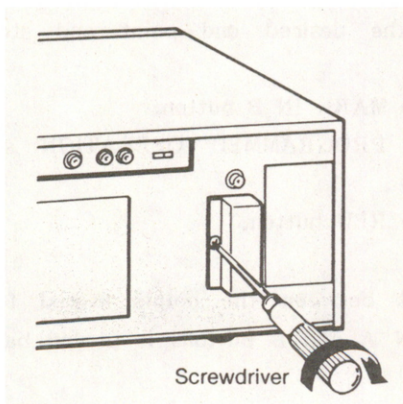
- 1 Remove the cover of the RF modulator compartment.



- 2 Insert the RF modulator into the compartment, taking care to align it properly.



- 3 Replace the supplied compartment cover.



1-5. OPERATION

To stop playback

Press the STOP button.

When the tape is played back to the end

It automatically rewinds to the beginning and stops.

To stop the tape momentarily

Press the PAUSE button. The tape stops and a still picture will appear on the monitor screen.

To resume playback, press the PAUSE button again or press the PLAY button.

The long pause mode

If the pause mode continues for about 8 minutes, the tape around the head drum automatically slackens to protect the video heads and the tape, and the still picture disappears. This is called the long pause mode. To cancel the long pause mode, press the PAUSE button.

The playback picture during the search operation

During the search operation the servo system is not locked, so guard-band noise flows on the playback picture.

If noise or snow appear in the playback picture

Turn the TRACKING control slowly to the left or right to obtain optimum picture quality. Always return the control to the FIXED position after playback.

STANDBY indicator does not go out and tape operation buttons do not operate.

Turn the unit off and then on again.


STANDBY indicator goes out, but tape operation buttons do not operate.

Press the EJECT button to eject the cassette. Take up any slack in the leader tape by turning the hubs in the direction shown by the arrow on the bottom of the cassette. Then insert the cassette and try again.


Memory backup

The points stored with the MARK IN A and B buttons and the last tape counter indication are retained by an internal backup battery also while the power is turned off. When the battery is exhausted, memory can not be retained. So it is need to replace the battery. The battery has a life of about 3 years.

To check the memory on the MARK IN buttons

- 1 Press the STOP button.
- 2 Set the PROGRAMMED OPERATION selector to .
- 3 Press the MARK IN A or B button, and the memory on that button will be displayed on the time counter.


To display the duration between the A and B points

- 1 Press the STOP button.
- 2 Set the PROGRAMMED OPERATION selector to .
- 3 Press the MARK IN A and B buttons simultaneously.

Note on repeat playback


When the repeat playback continues for a long period of time using the CTL signal, the playing portion may be shifted a little. Precise repeat playback can be obtained when a tape on which frame codes have been recorded is used and the BKU-701 is installed into the VP-7040.

To locate a particular point

- 1 Set the PROGRAMMED OPERATION selector to OFF.
- 2 Play the tape and stop it momentarily at the desired point.
- 3 Press the MARK IN A button.
- 4 Continue playback.
- 5 Set the PROGRAMMED OPERATION selector to .
- 6 Press the REW button.

- . The tape will stop at the point where the MARK IN A button was pressed.
- . When wishing to view a still picture at the designated point.
Press the SEARCH REV button instead of the REW button. Reverse playback is carried out at 5 times normal speed, until point A is reached.
- . If a point has not been stored in memory for the MARK IN A button, the tape stops at the point where the time counter indicates "00:00".


To repeat a particular portion

- 1 Set the PROGRAMMED OPERATION selector to OFF.
- 2 Stop the tape momentarily at the desired start point.
- 3 Press the MARK IN A button.
- 4 Locate the desired end point and stop the tape.
- 5 Press the MARK IN B button.
- 6 Set the PROGRAMMED OPERATION selector to .
- 7 Press the REW button.

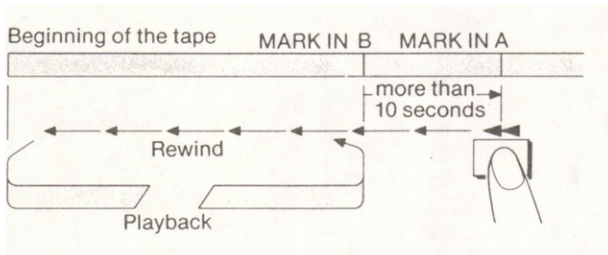
- . The part between the points stored for the MARK IN A and B buttons is played back repeatedly.

* If the video signal or the CTL signal is not recorded for more than 5 second after the point which is stored for the MARK IN B button, repeat playback is not possible.


To repeat between the beginning of the tape and a particular point

- 1 Set the PROGRAMMED OPERATION selector to OFF.
- 2 Locate the desired end point and stop the tape momentarily.
- 3 Press the MARK IN B button.
- 4 Let the tape run for at least 10 seconds, then stop the tape.
- 5 Press the MARK IN A button.
- 6 Set the PROGRAMMED OPERATION selector to .
- 7 Press the REW button.

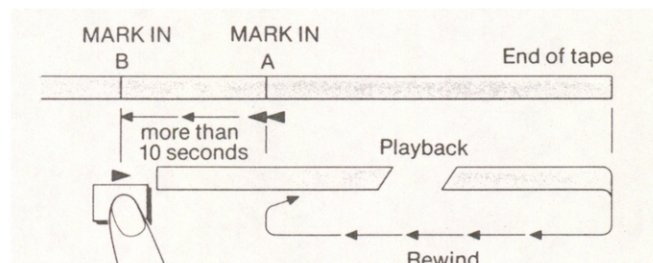
* The tape rewinds to the beginning of the tape, and then plays back the designated portion of the tape repeatedly.



To repeat between a particular point and the end of the tape

- 1 Set the PROGRAMMED OPERATION selector to OFF.
- 2 Locate the desired start point and stop the tape momentarily.
- 3 Press the MARK IN A button.
- 4 Press the REW button to rewind the tape for about the equivalent of 10 seconds on the tape counter, then stop the tape.
- 5 Press the MARK IN B button.
- 6 Set the PROGRAMMED OPERATION selector to .
- 7 Press the PLAY button.

. The tape is played back to the end and rewinds to the point where the MARK IN A button was pressed. The playback of the designated portion of the tape is repeated.

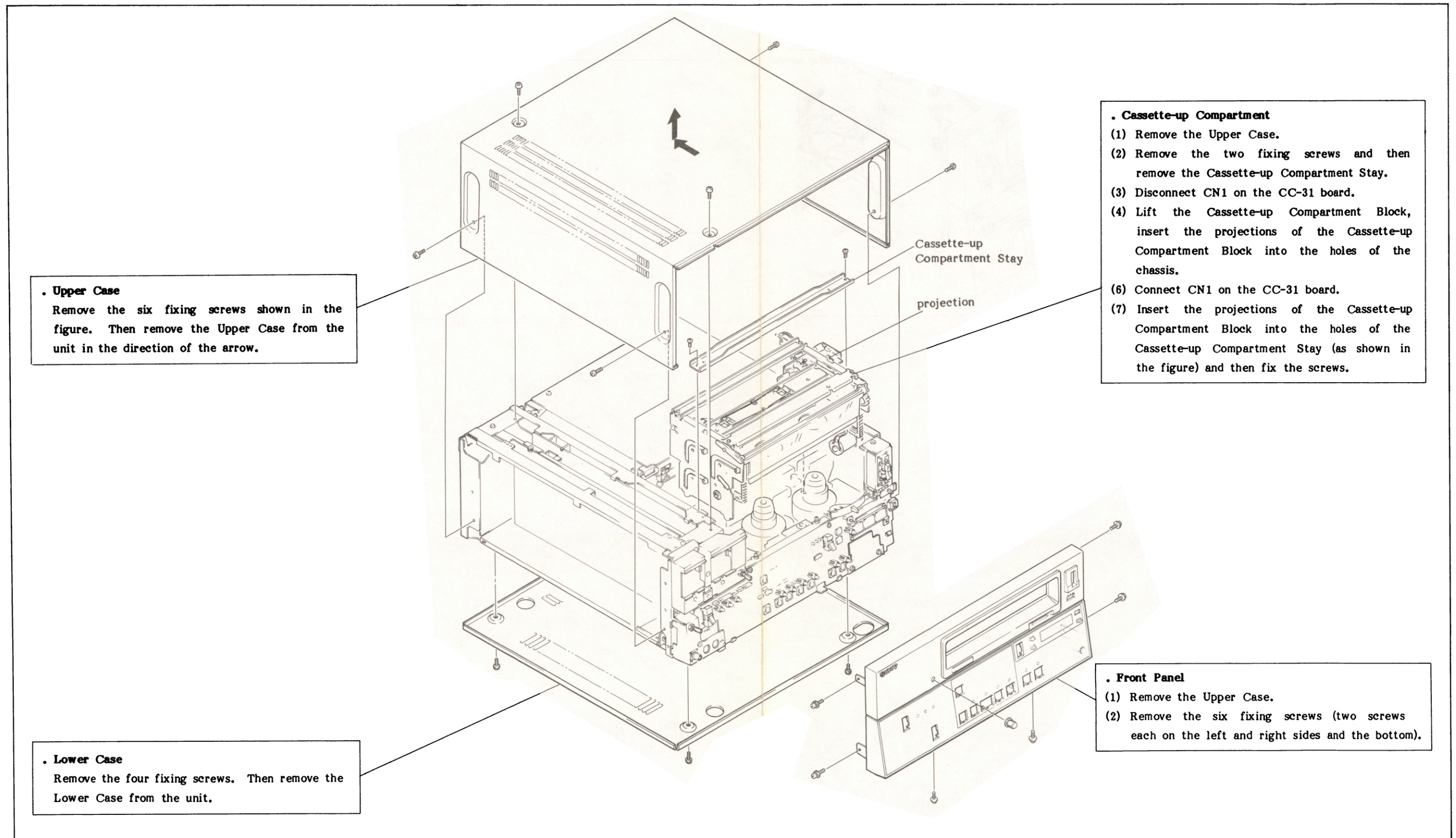


Note:

During the first playback run only, playback starts from point B.

SECTION 2 SERVICE INFORMATION

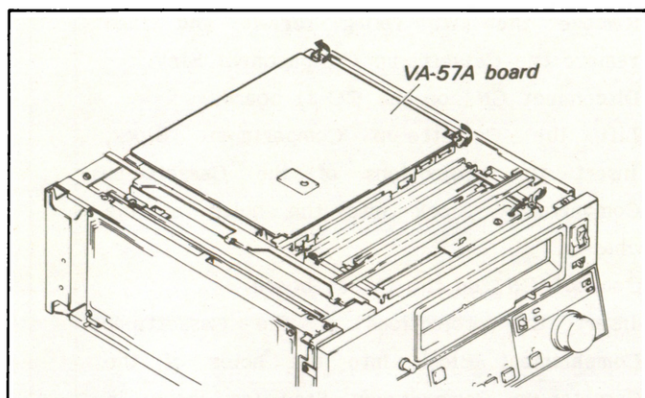
2-1. REMOVAL OF CABINET



2-2. HOW TO SERVICE THE PRINTED CIRCUIT BOARD

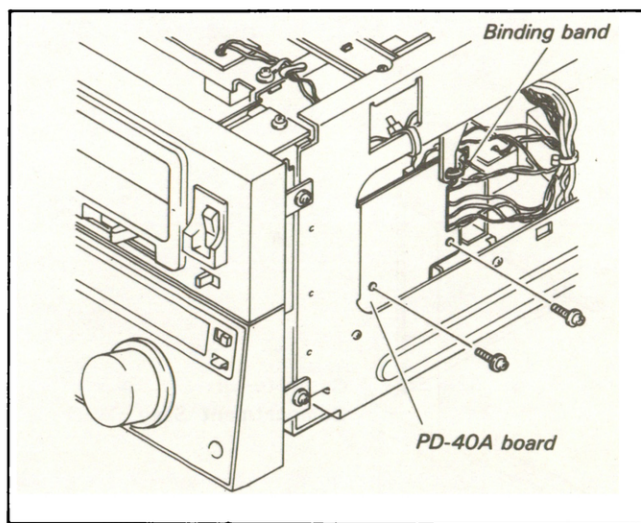
2-2-1. VA-57A Board

Turning the fastener to the direction of the arrow, the VA-57A board can be opened. Then, the component side of the VA-57A board can be repaired.

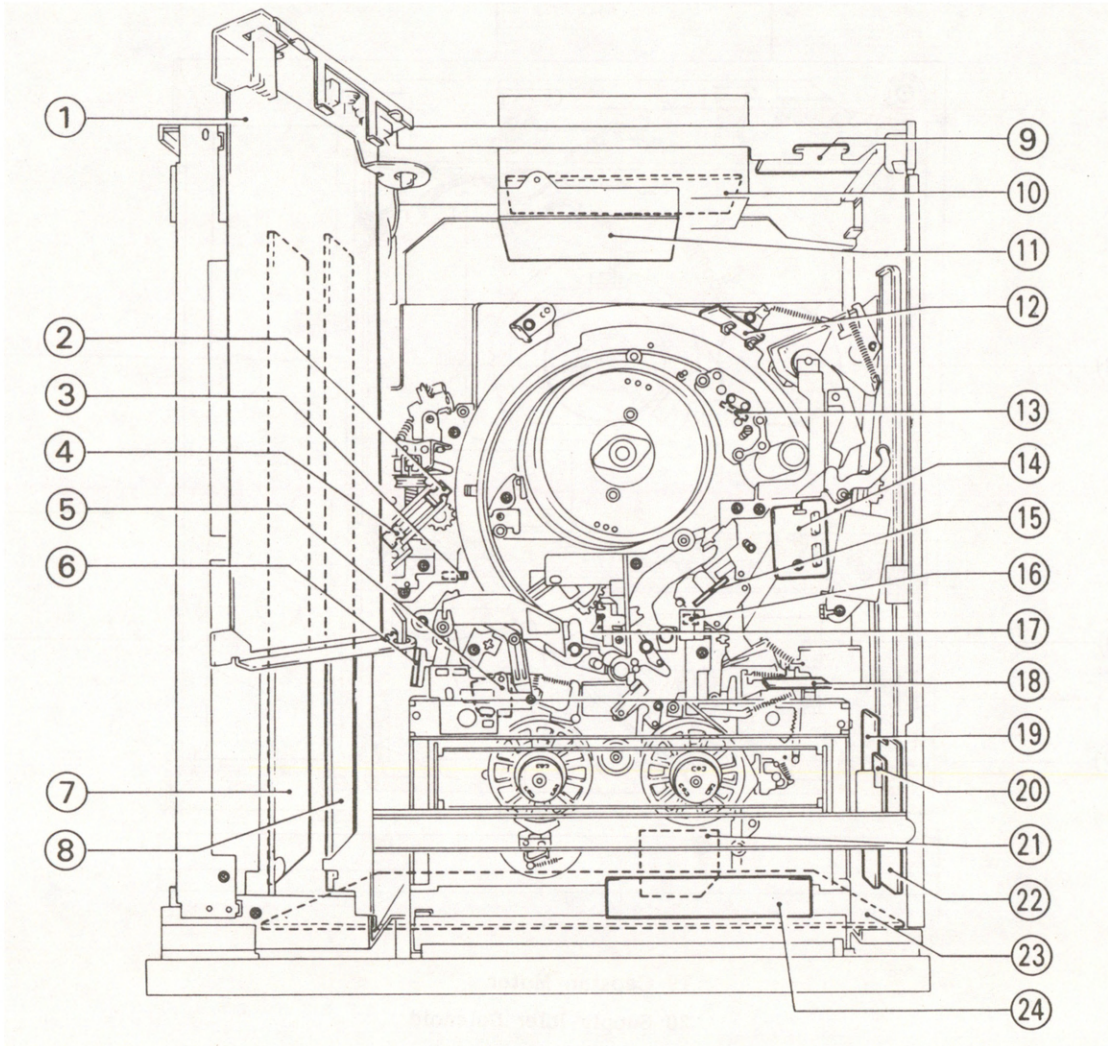


2-2-2. PD-40A Board

Cut a binding band and remove two screws, and then remove the PD-40A board.

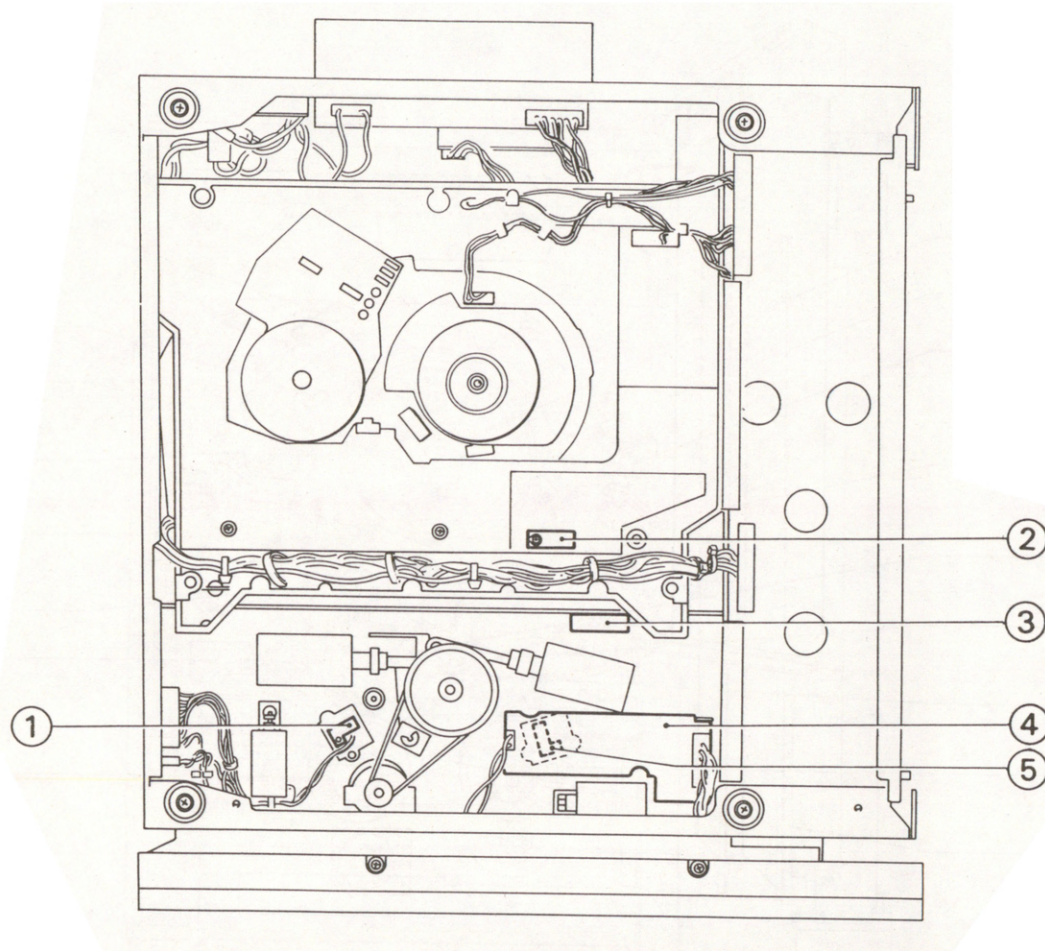


2-3. MAIN PARTS LOCATION
2-3-1. Location of the Printed Circuit Board
 [TOP VIEW]



- | | |
|--------------------------|------------------|
| 1 VA-57A Board | 12 PTC-33 Board |
| 2 PH-5 Board | 13 DUS-92 Board |
| 3 LM-13 Board | 14 DUS-147 Board |
| 4 PH-5 Board | 15 EC-28 Board |
| 5 SE-46 Board | 16 PH-5 Board |
| 6 PTC-34 Board | 17 PH-5 Board |
| 7 SV-93D Board | 18 CC-33 Board |
| 8 SY-106B Board | 19 CC-32 Board |
| 9 AC-65 Board (For UC) | 20 CC-31 Board |
| AC-89 Board (For EK) | 21 RM-39 Board |
| 10 UR-14 Board (For UC) | 22 PD-40A Board |
| UR-14E Board (For EK) | 23 KY-105D Board |
| 11 DC-31B Board (For UC) | 24 LP-41 Board |
| DC-31C Board (For EK) | |

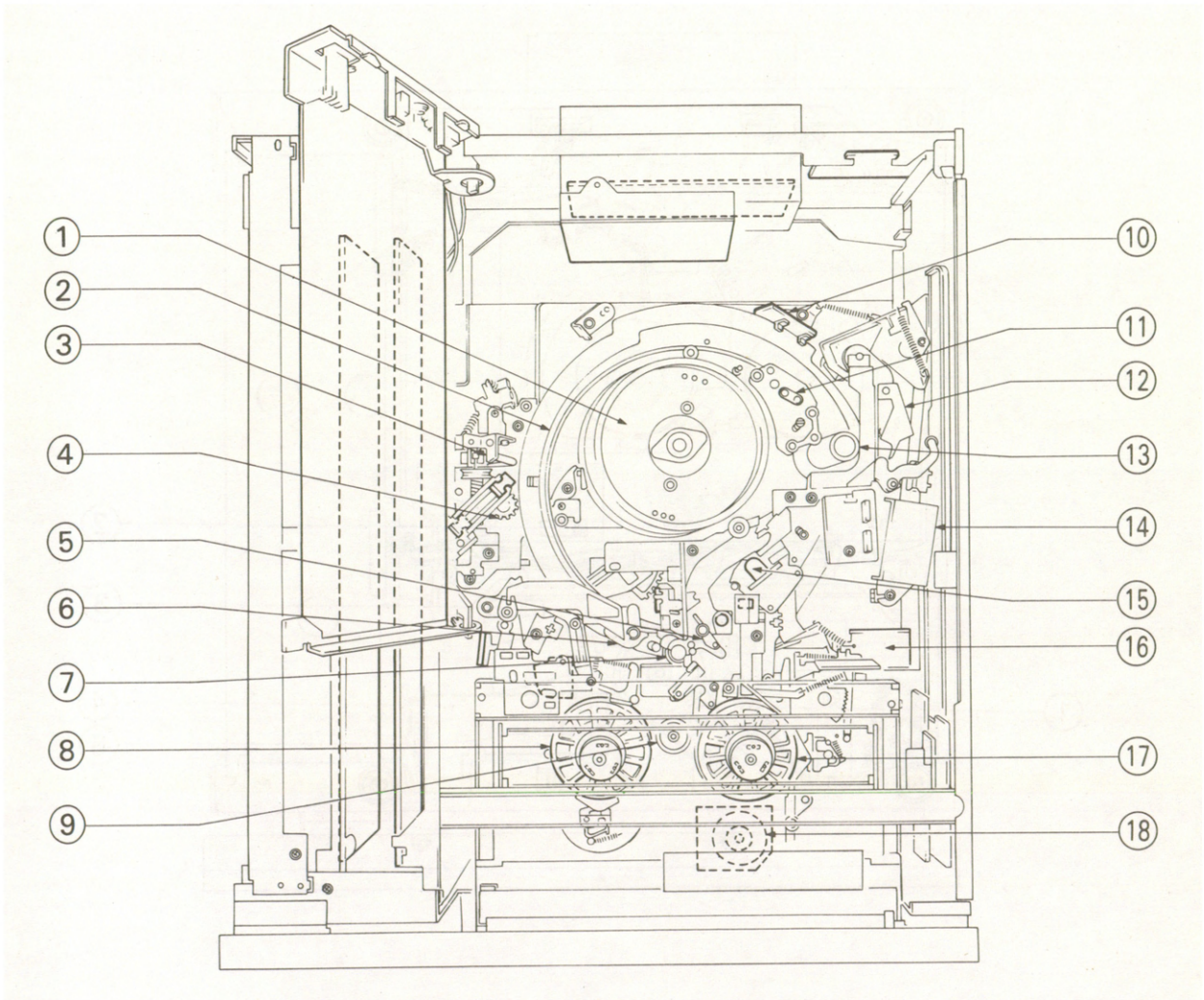
[BOTTOM VIEW]



- | |
|----------------|
| 1 PTC-35 Board |
| 2 PT-9 Board |
| 3 TG-22 Board |
| 4 PD-41 Board |
| 5 PTC-35 Board |

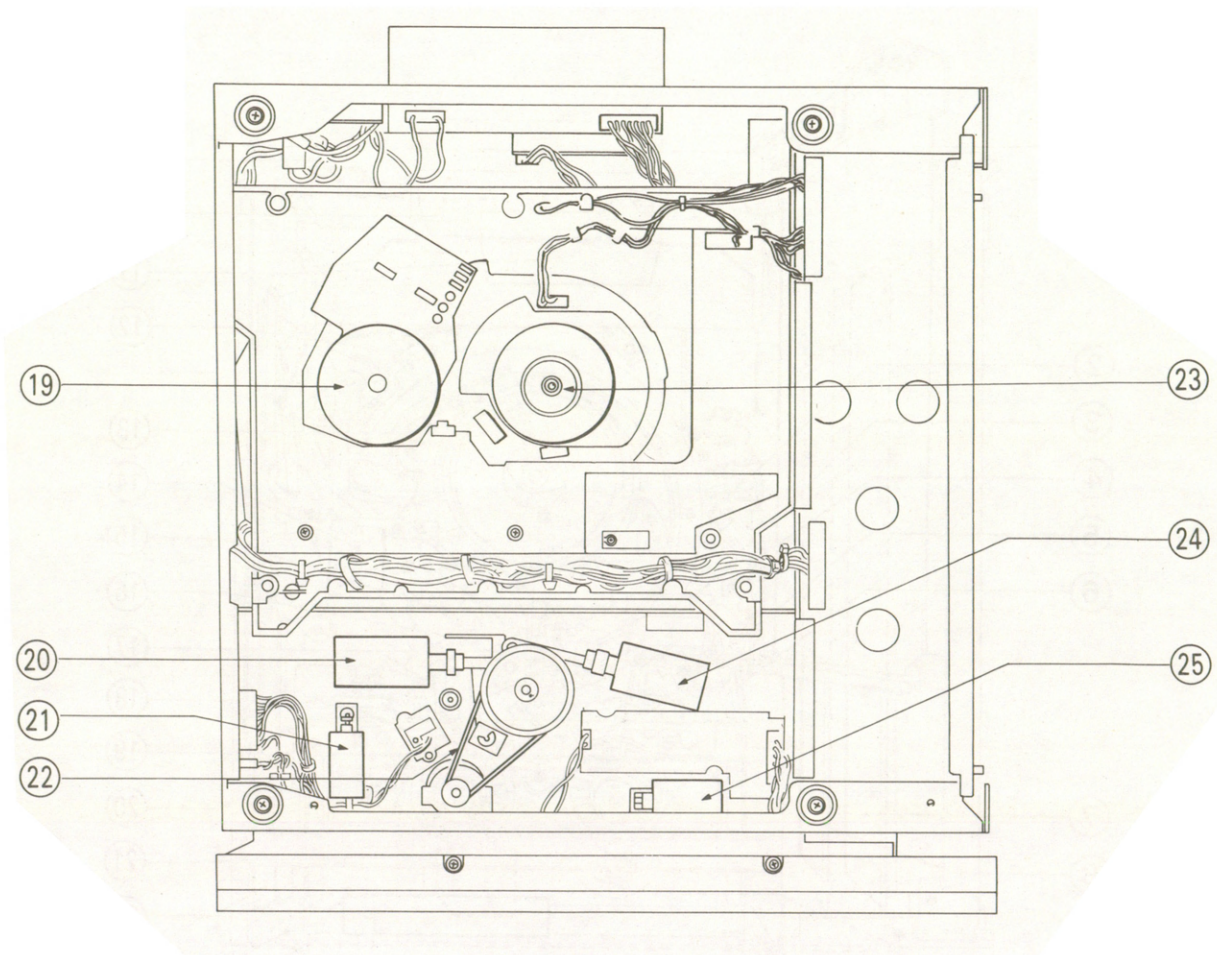
2-3-2. Location of the Mechanical Main Parts/Components

[TOP VIEW]



- | | |
|----------------------|----------------------|
| 1 Head Drum | 10 FR Detector |
| 2 Threading Ring | 11 Audio/CTL Head |
| 3 T Correction Guide | 12 Pinch Lever |
| 4 Gear Box | 13 Capstan Shaft |
| 5 S Drawer Arm | 14 Pinch Solenoid |
| 6 T Drawer Arm | 15 CTL PB Head |
| 7 Pinch Roller | 16 Search Solenoid |
| 8 Take-up Reel Table | 17 Supply Reel Table |
| 9 FF/REW Idler | 18 Reel Motor |

[BOTTOM VIEW]



- | |
|---------------------------|
| 19 Capstan Motor |
| 20 Supply Idler Solenoid |
| 21 Supply Brake Solenoid |
| 22 Belt for FF/REW Idler |
| 23 Drum Motor |
| 24 Take-up Idler Solenoid |
| 25 Take-up Brake Solenoid |

2-4. PRINTED CIRCUIT BOARD

Circuit information is provided below.

SYSTEM	BOARD	CIRCUIT FUNCTION
VIDEO	VA-57A	Video Demodulator
AUDIO	DUS-92	Audio/CTL Head
	DUS-147	Audio/CTL Head
	VA-57A	Audio PB Amplifier
SERVO	EC-28	FR CTL Head
	DUS-92	Audio CTL Head
	DUS-147	Audio CTL Head
	PT-9	Reel Motor Driver
	SV-93D	Servo System
POWER	AC-65	AC Input (For UC)
	AC-89	AC Input (For EK)
	DC-31B	DC Supply (For UC)
	DC-31C	DC Supply (For EK)
	UR-14	Switching Regulator (For UC)
	UR-14E	Switching Regulator (For EK)
KEY	KY-105D	Function Key/Display
SYSTEM CONTROL	PD-40A	Plunger Solenoids
	PD-41	Plunger Solenoids
	PH-5	Tape Beginning/End Sensor
	SY-106B	System Control
OTHERS	CC-31	Cassette-up Compartment
	CC-32	Cassette In Detector
	CC-33	Cassette Down Detector
	LM-13	Threading Motor
	LP-41	Cassette Compartment Light

2-5. CONNECTORS

When external cables are connected to the various connectors on the connector panel during maintenance, the hardware listed below (or equivalents) must be used.

Panel Indication	Connector
TV	1-506-161-00 CONNECTOR, 8P, MALE
SYNC IN VIDEO OUT	1-560-069-11 PLUG, BNC, MALE
AUDIO MONITOR	1-506-311-00 PLUG, PIN
RF OUT	1-506-305-00 PLUG, F
AUDIO LINE OUT CH-1, CH-2	1-506-311-00 PLUG, PIN

2-6. OUTPUT SIGNAL OF THE CONNECTOR


VIDEO OUT 1, 2 : 1.0 ± 0.2 Vp-p,
75 ohms, unbalanced,
sync negative

AUDIO LINE OUT CH-1, CH-2
: -5 dBs (47-kohm load)

AUDIO MONITOR : -5 dBs (47-kohm load)

2-7. SPARE PARTS

(1)

The shaded and  -marked components are critical to safety.

Replace only with the same components as specified.

- (2) Replacement parts supplied from the Sony Parts Center will sometimes have a different shape and outside view from the parts which are used in the unit. This is due to "accommodating improved parts and/or engineering changes" or "standardization of genuine parts".
- . This manual's exploded views and electrical spare parts lists indicate the part numbers of "the present standardized genuine parts". Regarding engineering part changes by our engineering department, refer to Sony service bulletins and service manual supplements.
- (3) The parts marked with "s" in the SP column of the exploded views and electrical spare parts lists are normally stocked for replacement purposes. The parts marked with "o" in the SP column are not normally required for routine service work. Orders for parts marked with "o" will be processed, but allow for additional delivery time.

2-8. SELECT SWITCH SETTING

Along with the select switches on the control panel and the connector panel, the switch listed below is on the SY-106B board. This switch must be set according to operating conditions.

. SY-106B Board

SW1: SELF DIAGNOSTIC Switch

ON: SELF DIAGNOSTIC mode

OFF: NORMAL mode

When the unit is shipped, this switch is set to the OFF position.

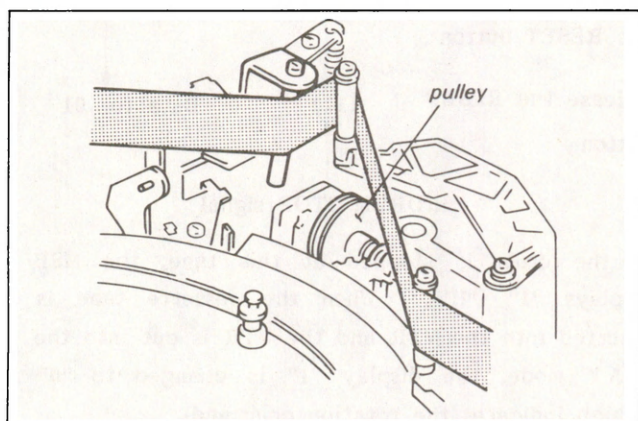
2-9. HOW TO OPERATE THE MACHINE WITHOUT INSTALLING A CASSETTE TAPE

- (1) Remove the Cassette-up Compartment. (Refer to Section 2-1.)
(The Tape Beginning Sensor and Tape End Sensor are disabled according to disconnect the connector of Cassette-up Compartment.)
- (2) Turn the power ON. (The machine enters the FR-STOP mode automatically.)
- (3) The machine can be placed into the desired mode by pressing the function button corresponding to the mode.

2-10. CASSETTE REMOVAL PROCEDURE WHEN NORMAL EJECTION IS NOT POSSIBLE

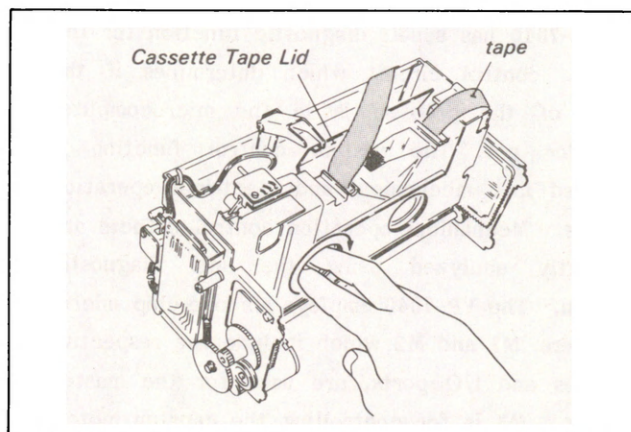
If the EJECT operation becomes impossible due to trouble or the Cassette-up Compartment does not rise when the EJECT operation takes place, the cassette tape can be removed from the set by following the procedures described below.

- (1) Turn the power OFF.
- (2) Remove the Upper Case. (Refer to Section 2-1.)
- (3) Turn the white pulley of the Gear Box by hand in a clockwise direction looking from the front panel side until the Threading Ring is in the FR-STOP position (until the S Drawer Arm is located at the front of CTL head). (At this time, the Threading Ring moves in the unthreading direction. But the tape remains at the position of threading completion.)

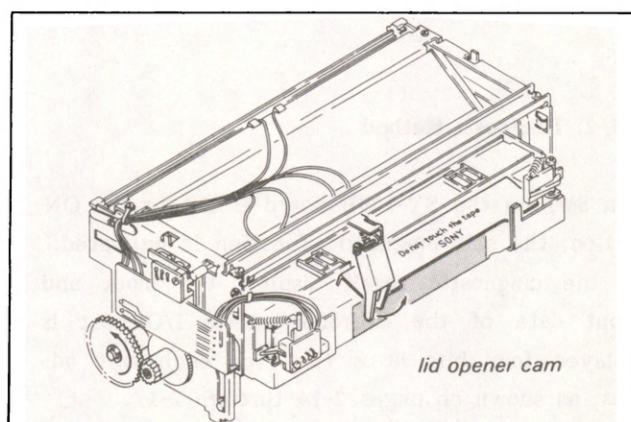


- (4) Disconnect the connector CN1 on the CC-31 board of the Cassette-up Compartment.
- (5) Remove the Cassette-up Compartment Stay. (Refer to Section 2-1.)
- (6) Slowly lift the Cassette-up Compartment with the cassette tape in it. Remove the tape remaining in the set carefully so that it is not damaged.

- (7) Hold the Cassette Tape Lid so that it does not close. Wind the tape into the cassette by turning the reel hub on the back of the cassette by hand.



- (8) Raise the cam for opening the lid and close the cassette lid.



- (9) Remove the tape from the Cassette-up Compartment.
- (10) Turn the gear on the right side of the Cassette-up Compartment by hand in a counterclockwise direction in order to place the Cassette-up Compartment into the up state.
- (11) Locate the cause of the trouble and remedy the problem.

2-11. DIAGNOSTIC FUNCTION IN SYSTEM CONTROLLER

2-11-1. Outline of Self Diagnosis

The VP-7040 has a self diagnostic function for the system control circuit which determines if the source of the problem is in the microcomputer itself or not. The system control function is classified into mechanical and electrical operation controls. Mechanical operation control defects are efficiently analyzed using the self diagnostic function. The VP-7040 employs six one-chip microcomputers. M1 and M2 which include the respective memories and I/O ports, are used for the master controls. M3 is for controlling the capstan motor, M4 is for controlling the display, M5 is for decoding the remote control signal and M6 is used for the BKU-702 (Option).

2-11-2. Diagnosis Method

When SW1 on the SY-106B board is set to the ON position, the self diagnostic function is activated. For the diagnostic result display, the input and output data of the microcomputer's I/O port is displayed four bits at a time for each test address, as shown on pages 2-14 through 2-17. When the RESET button is pressed, the test address is displayed. When the MARK IN A button is pressed while the RESET button is pressed, the LSB of the test address is changed as shown below.

→ 0 → 1 → 2 → ... → 9 → L → H → P → R → -(minus) → (blank) →

When the MARK IN B button is pressed while the RESET button is pressed, the MSB of the test address is changed as shown below.

→ 0 → 1 → 2 →

Twenty-six test addresses are available in hexadecimal notation. Therefore, when the RESET, MARK IN A and MARK IN B buttons are pressed, any test address data (digits 1 through 4) shown in the table on pages 2-14 through 2-17 can be displayed on the front panel LEDs. On the LED display, the logic "H" is displayed "1", and the logic "L" is "0". This logic value is changed depending on the VTR operating condition.

Therefore, the H:DRUM STOP signal at test address "01" can be observed by the following procedure.

(Operation)	(LED display)	(Remarks)
SW1/SY-106B board — ON	CTL display 1100	DIAGNOSTICS MODE
Press the RESET button	↓ 00	↓ TEST ADDRESS = 00
Press the MARK IN A button once while pressing the RESET button	↓ 01	↓ TEST ADDRESS = 01
Release the RESET button	↓ 1111	↓ Data for 01
	↑ H:DRUM STOP signal	

If the drum is stopped at this time, the MSB displays "1" ("H"). When the cassette tape is inserted into the VTR and the VTR is put into the PLAY mode, the display "1" is changed to "0" (which indicates the rotation command).

The input and output signals of the microcomputer in each mode are shown in the timing chart on pages 2-19 through 2-34. If an input signal is properly sent to the microcomputer in each mode, the microcomputer sends an output signal shown in the timing chart.

2-11-3. Troubleshooting

The troubleshooting with the self diagnostic function is described below.

The mode conversion diagram of the mechanical operation is shown on page 2-18. Referring to this diagram, check where the present trouble occurs during mode conversion, or where malfunctions are found during mechanism (e.g., motor or solenoid) operation. When the mode in which the trouble occurs is detected, refer to the timing chart described in the mode conversion diagram. The timing chart shows the input and output signals of the microcomputer in each mode. Therefore, when the motor or solenoid is abnormal, observe the output signal line using an LED to check whether it is changed as shown in the timing chart. When the output signal from the microcomputer is normal, check the output signal of the next microcomputer. This process is continued. If the signal line is not changed as shown in the timing chart, refer to the schematic diagram for the trouble location. The timing chart lists an input/output signal name, signal display test address and digit, and the microcomputer pin name through which a signal is input and output.

For example, the H:DRUM STOP signal is "01-DIGIT 1" and is displayed in the MSB (digit 1) when the test address is "01". Whether the input and output signals are changed as shown in the timing chart is checked with the actual VTR operation.

2-11-4. Diagnosis List

TEST ADDRESS	DISPLAYED DATA				INPUT/OUTPUT PORT NAME ON THE MICRO PROCESSOR	
	DIGIT 1	DIGIT 2	DIGIT 3	DIGIT 4		
00	CAPSTAN CMD FWD/REW (1=FWD CMD 0=REV CMD)	DRUM NORMAL/SEARCH (1=NORMAL 0=SEARCH MODE)	0	0	E1	OUT/IC7 on SY
01	H:DRUM STOP CMD (1=DRUM STOP 0=DRUM ROTATE)	1	1	1	E2	OUT/IC7 on SY
02	CTL COUNT UP/DOWN (1=COUNT UP 0=COUNT DOWN)	1	1	1	E3	OUT/IC7 on SY
03	H:REEL REV 1=SEARCH REV MODE	H:REEL FWD 1=PLAY.REC.orSEARCH FWD MODE	H:REEL STILL 1=PLAY(REC) PAUSE or SEARCH PAUSE	H:REEL STOP 1=STOP MODE	P	OUT/IC7 on SY
04	H:REEL FF/REW (1=FF or REW MODE 0=other mode)	L:SEARCH SOL.ON (1=OFF 0=ON)	L:PINCH SOL.ON (1=OFF 0=ON)	1	0	OUT/IC7 on SY
05	L:T-BRAKE SOL.ON (1=OFF 0=ON)	L:S-BRAKE SOL.ON (1=OFF 0=ON)	L:T-IDLER SOL.ON (1=OFF 0=ON)	L:S-IDLER SOL.ON (1=OFF 0=ON)	E0	OUT/IC7 on SY
06	SEARCH SPEED DATA (NOTE 1)				R2	OUT/IC7 on SY
07	L:CASSETTE COMPARTMENT UP CMD 0=UP	L:CASSETTE COMPARTMENT DOWN CMD 0=UP DOWN	L:THREAD MOTOR ON 0=THREAD	L:UNTHREAD MOTOR ON 0=UNTHREAD	R3	OUT/IC7 on SY
08	L:SERVO LOCK (1=UNLOCK 0=LOCK)	L:FR-UNTHREAD POSITION	H:CASSETTE DOWN 1=DOWN (NOTE 2)	H:CASSETTE IN 1=INSERTED	K	IN/IC7 on SY
09	H:DRUM STOP (1=STOP 0=ROTATE)	L:REEL STOP (1=STOP 0=ROTATE)	H:T-IDLER ON (1=ON 0=OFF)	H:T-REEL STOP (1=STOP 0=ROTATE)		
0L	L:CAPSTAN STOP (1=ROTATE 0=STOP)	CAPSTAN FWD/REV (1=FWD 0=REV)	UNTHREAD END (NOTE 3)	THREAD END		
0H	0	0	PAUSE SELECT-1 (NOTE 4)	PAUSE SELECT-0	E4	IN/IC7 on SY
0P	L:DRUM ROTATE (1=STOP 0=ROTATE)	L:CASSETTE CONNECT 0=COMPARTMENT IS CONNECTED	L:SLACK DET:OFF (NOTE 5)	0	E5	IN/IC7 on SY
OR	RING SLACK ERROR MESSAGE (NOTE 6) The condition of VTR is detected by IC7/SY board when the ring slack occurs. The RING SLACK means that the threading ring isn't rotating.					
0-	0	0	0	0		
0(Blank)	0	0	0	0		

10	H:FF KEY ON (1=ON 0=OFF	H:PLAY KEY ON (1=ON 0=OFF	H:REW KEY ON (1=ON 0=OFF	H:STOP KEY ON (1=ON 0=OFF
11	0	0	0	H:PAUSE KEY ON (1=ON 0=OFF
12	0	0	0	H:EJECT KEY ON (1=ON 0=OFF
13	H:SERCH CMD (1=SERCH 0=NORMAL	FWD/REV CMD (1=FWD 0=REV	0	0
14	H:TIMER PLAY SW ON (1=ON 0=OFF	0	H:TIMER PLAY STATUS (1=TIMER PLAY 0=OTHER MODE	0
15	CTL/FC SW (1=CTL 0=FC	0	0	0
16	0	EIA/CCIR (1=EIA 0=CCIR	L:DEW DET (1=NOT DETECTED 0=DETECTED	H:PROGRAM REW SW (1=ON 0=OFF
17	H:KEY REQUEST 1=ANY KEY IS TURNED ON	H:REQUEST CMD 1=GOES INTO ANY MODE DURING PROGRAM OPERATION	0	H:PROGRAM REPEAT SW (1=ON 0=OFF
18	SEARCH SPEED DATA (NOTE 1)			
19	1	1	1	1
1L	1	1	1	1
1H	1	L:RM-690 INHIBIT (1=ENABLED 0=INHIBITED	L:NO CTL (1=NORMAL 0=NO CTL IN PLAY MODE	0
1P	H:REW LED (1=ON 0=OFF	0	0	0
1R	0	H:PAUSE LED (1=ON 0=OFF	H:PLAY LED (1=ON 0=OFF	H:FF LED (1=ON 0=OFF
1-	H:STD-BY LED (1=ON 0=OFF	H:REV SEARCH LED (1=ON 0=OFF	H:FWD SEARCH LED (1=ON 0=OFF	0
1(Blank)	H:FC LED (1=ON 0=OFF	H:KEY INHIBIT 1=SW ON BKU-701 INHIBITS FRONT KEYS	H:HOURS METER ON (1=METER ON 0=METER OFF	H:BKU CONNECTED (1=CONNECTED 0=NOT CONNECTED

20	REEL SLACK ERROR MESSAGE (NOTE 7)			
	The condition of VTR is detected by IC12/SY board when the reel slack occurs. The REEL SLACK means that the reel motor is not rotating.			
21	0	0	0	0
22	0	0	0	0
23	L:UNTHREAD (1=OTHER MODE 0=UNTHREAD MODE	L:RX-DATA REC (1=OTHER MODE 0=RX-DATA REC MODE	L:VIDEO MUTE (1=VIDEO is OUTPUT 0=VIDEO is MUTED	R:AUDIO MUTE (1=AUDIO is MUTE 0=AUDIO is OUTPUT
24	1	0	1	0
25	0	0	0	0
26	0	0	0	0

NOTE 1 SEARCH SPEED DATA

DATA DISPLAYED	TAPE SPEED
0 0 0 0	NOISELESS STILL
0 0 0 1	$\times 1/30$
0 0 1 0	$\times 1/10$
0 0 1 1	$\times 1/5$
0 1 0 0	$\times 1/2$
0 1 0 1	$\times 1$
0 1 1 0	$\times 2$
0 1 1 1	$\times 5$
1 0 0 0	$\times 8$
1 0 0 1	STILL

NOTE 2 CASSETTE POSITION

CASSETTE DOWN	CASSETTE IN	CASSETTE POSITION
0	0	DURING CASSETTE-IN
0	1	DURING CASSETTE-DOWN
1	0	CASSETTE-UP COMPLETION
1	1	CASSETTE-DOWN COMPLETION

NOTE 3 THREAD END/UNTHREAD END

UNTHREAD END	THREAD END	THREADING RING POSITION
1	1	Between CASSETTE-IN and FR-STOP
0	1	THREAD END position
0	0	Between FR-STOP and THREAD END
1	0	FR-STOP position

NOTE 4 PAUSE SELECT-1/PAUSE SELECT-0

PAUSE SELECT-1	PAUSE SELECT-0	PAUSE TIMER
0	1	8 min
1	1	1 min
1	0	10 sec
0	0	2 sec

NOTE 5 SLACK DETECT

When shorting between TP 3 and GND(E1)
on The SY board, SLACK Detector
does not operate.
Normal state is "H".

NOTE 6 RING SLACK ERROR MESSAGE(This item shows that the mode when the RING SLACK occurs.)

DATA DISPLAYED	CONDITION
0 0 0 0	RING SLACK is not occurring.
0 0 0 1	CASSETTE DOWN →FR-STOP
0 0 1 0	FR-STOP →THREAD END
0 1 0 0	FR-STOP →CASSETTE DOWN
0 1 0 1	DURING CASSETTE IN

NOTE 7 REEL SLACK ERROR MESSAGE(This item shows that the mode when the RING SLACK occurs.)

DATA DISPLAY				CONDITION
0	0	0	0	REEL SLACK DOES NOT OCCUR
0	1	1	0	FF or REW MODE
0	1	1	1	FR-STOP →FR UNTHREAD
1	0	0	0	THEND → FR-STOP
1	0	0	1	×5 or ×8 SPEED MODE
1	0	1	0	×1 or ×2 SPEED MODE
1	0	1	1	×1/2 SPEED MODE
1	1	0	0	×1/5 SPEED MODE
1	1	0	1	×1/10 SPEED MODE
1	1	1	0	×1/30 SPEED MODE

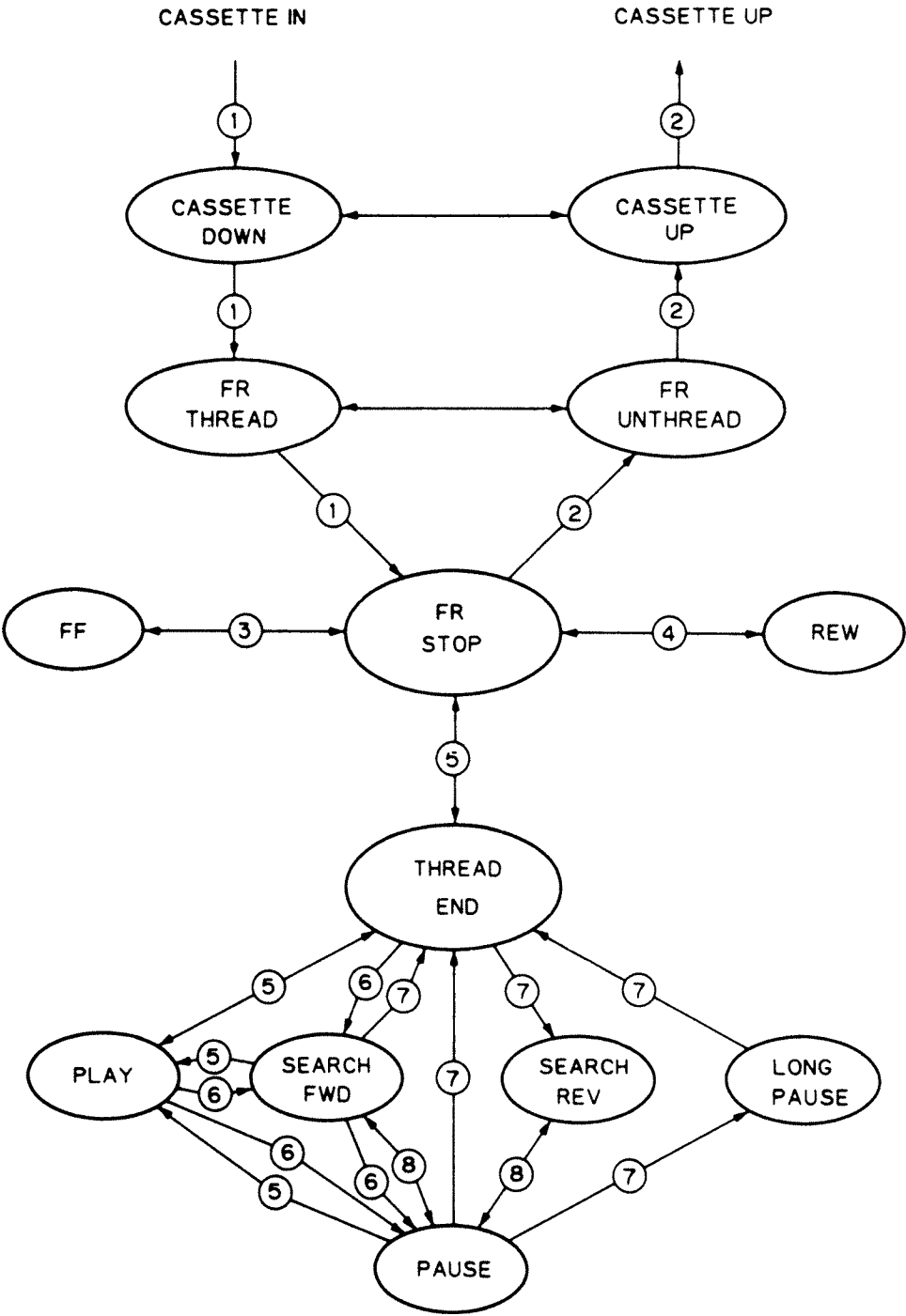
Selecting the Long Pause Timer

TYPE 7 and 9 Series can be select four pattern as the following setting. (The former models can be only one select, 8 min.)

It is can be controlled by TP5 (Address E-6) and JW144 (Address G-2).

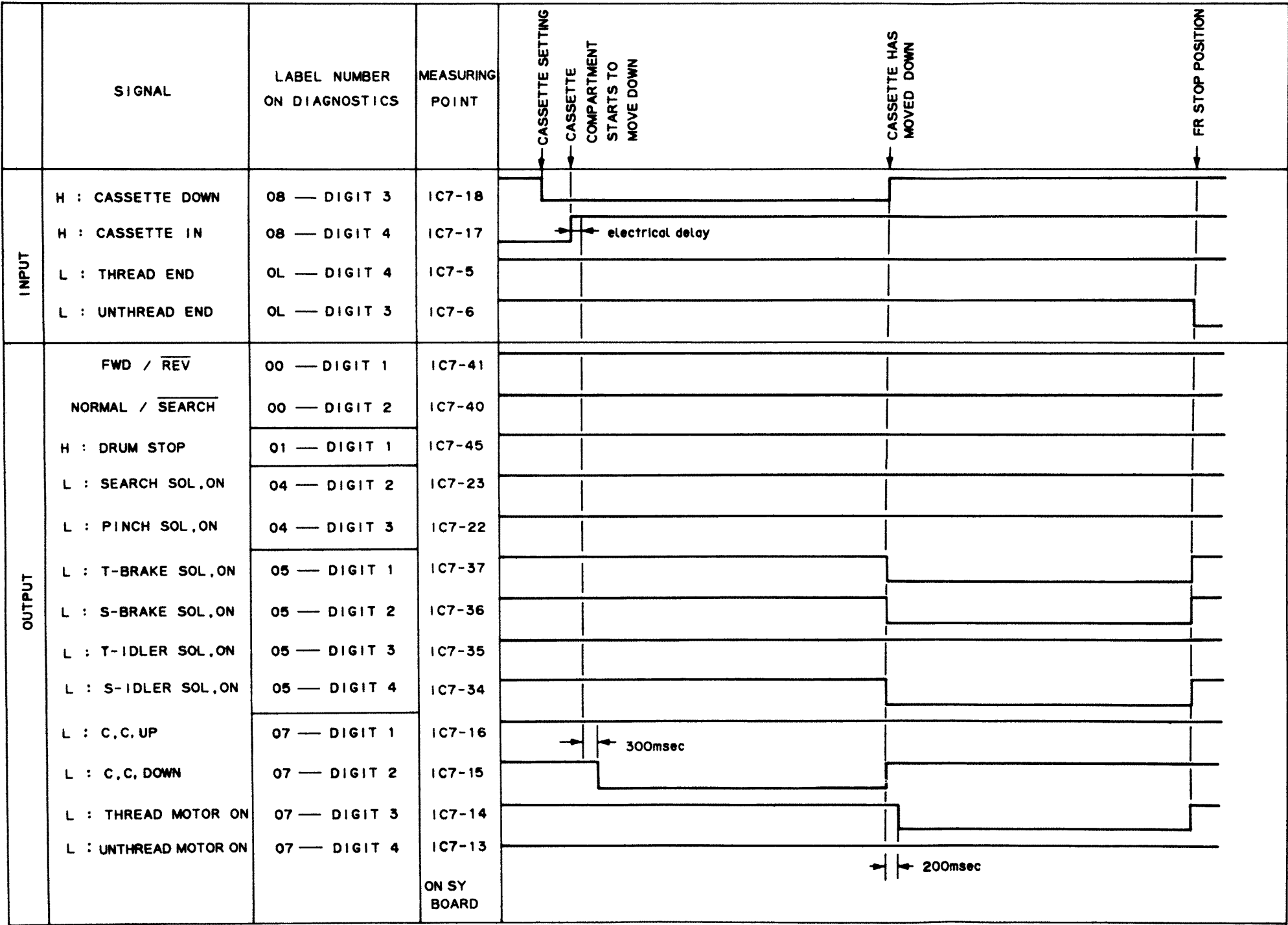
JW144	TP5	PAUSE TIMER
SHORT	OPEN	8 min.
SHORT	GND SHORT	2 sec.
OPEN	OPEN	1 min.
OPEN	GND SHORT	10 sec.

2-11-5. Mode Conversion Diagram and Timing Chart



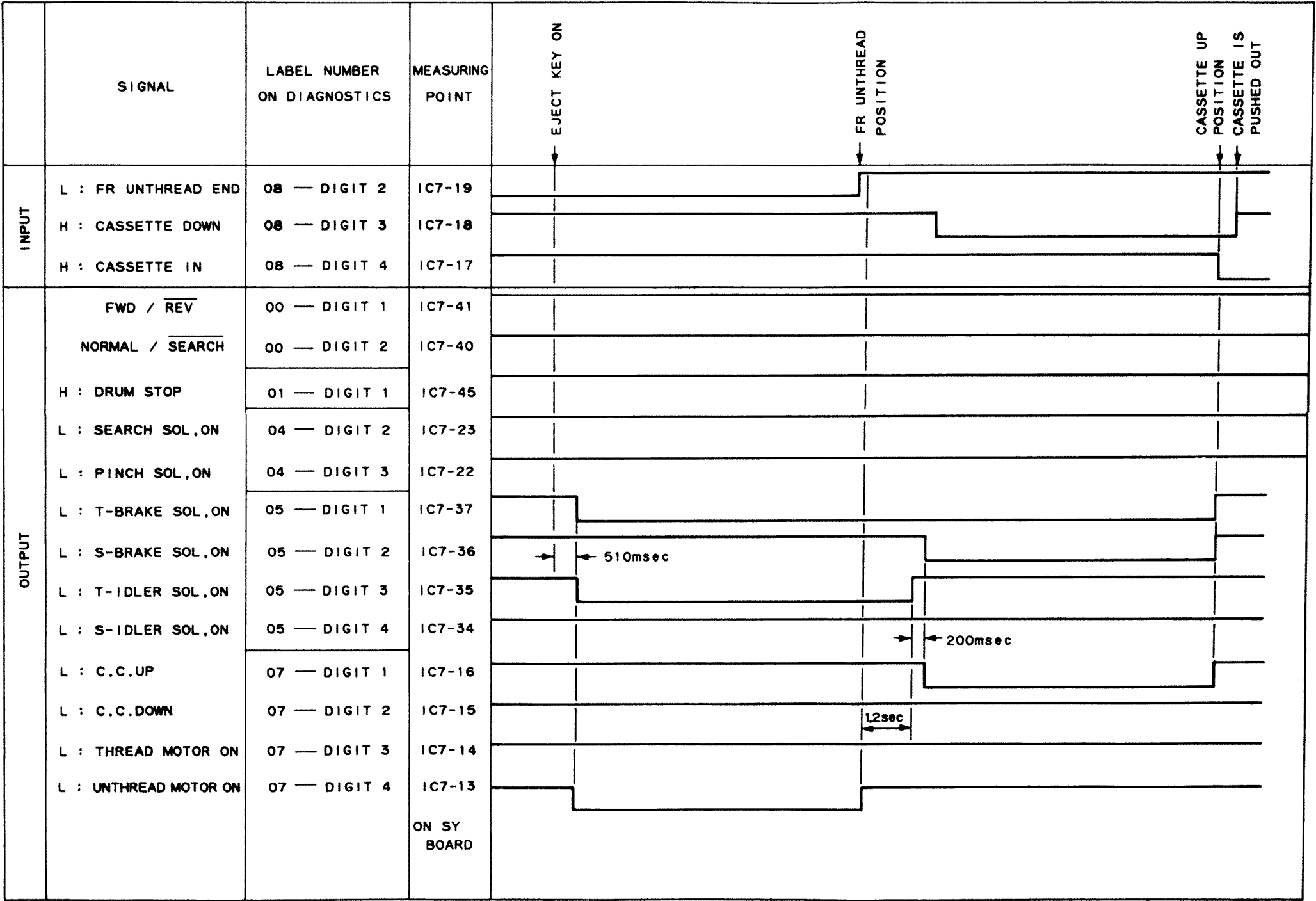
NOTE: Number in the Figure means title number of
Timing chart (page 2-19 through 2-34).

1. THREADING OPERATION (CASSETTE IN→CASSETTE DOWN→FR STOP POSITION)

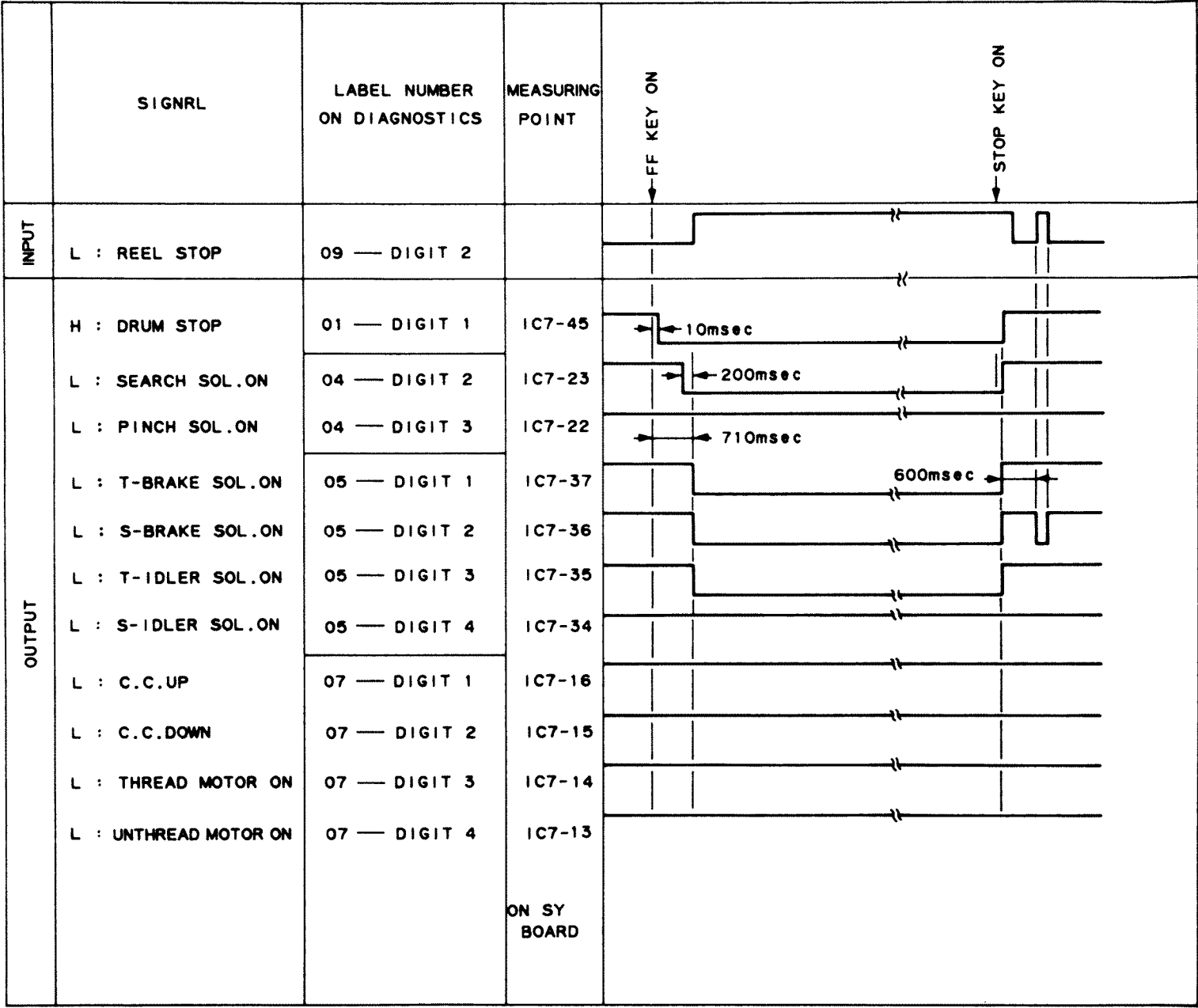


C.C. = CASSETTE UP COMPARTMENT

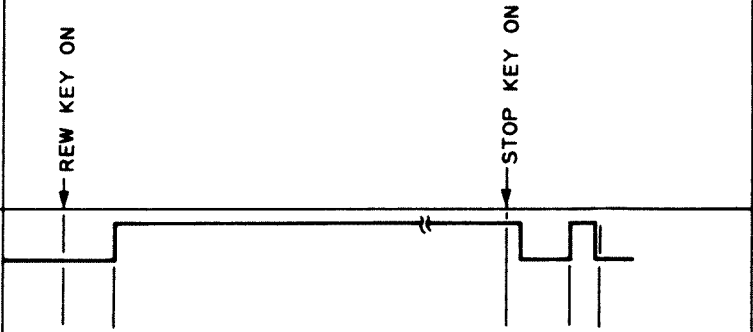



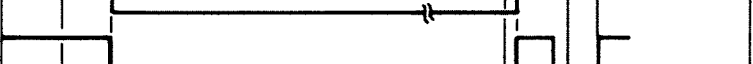




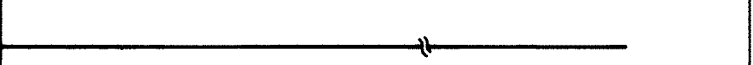


2. UNTHREADING OPERATION (FR STOP POSITION → FR UNTHREAD END POSITION → CASSETTE UP)



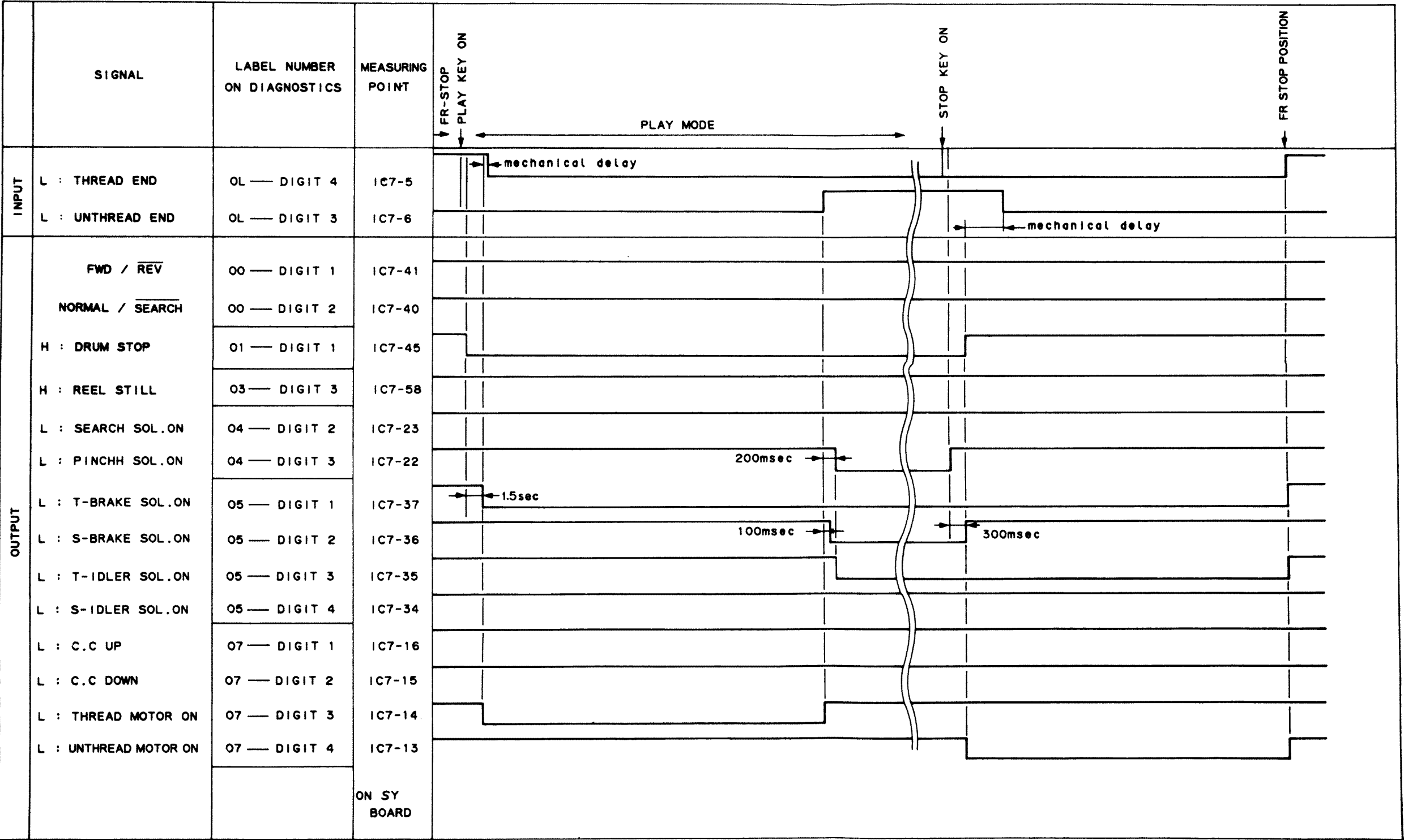
3. FF MODE (FR STOP→FF→FR STOP)



4. REW MODE (FR STOP→REW→FR STOP)

	SIGNAL	LABEL NUMBER ON DIAGNOSTICS	MEASURING POINT	
INPUT	L : REEL STOP	09 — DIGIT 2		
OUTPUT	H : DRUM STOP	01 — DIGIT 1	IC7-45	
	L : SEARCH SOL.ON	04 — DIGIT 2	IC7-23	
	L : PINCH SOL.ON	04 — DIGIT 3	IC7-22	
	L : T-BRAKE SOL.ON	05 — DIGIT 1	IC7-37	
	L : S-BRAKE SOL.ON	05 — DIGIT 2	IC7-36	
	L : T-IDLER SOL.ON	05 — DIGIT 3	IC7-35	
	L : S-IDLER SOL.ON	05 — DIGIT 4	IC7-34	
	L : C.C. UP	07 — DIGIT 1	IC7-16	
	L : C.C. DOWN	07 — DIGIT 2	IC7-15	
	L : THREAD MOTOR ON	07 — DIGIT 3	IC7-14	
	L : UNTHREAD MOTOR ON	07 — DIGIT 4	IC7-13	
			ON SY BOARD	

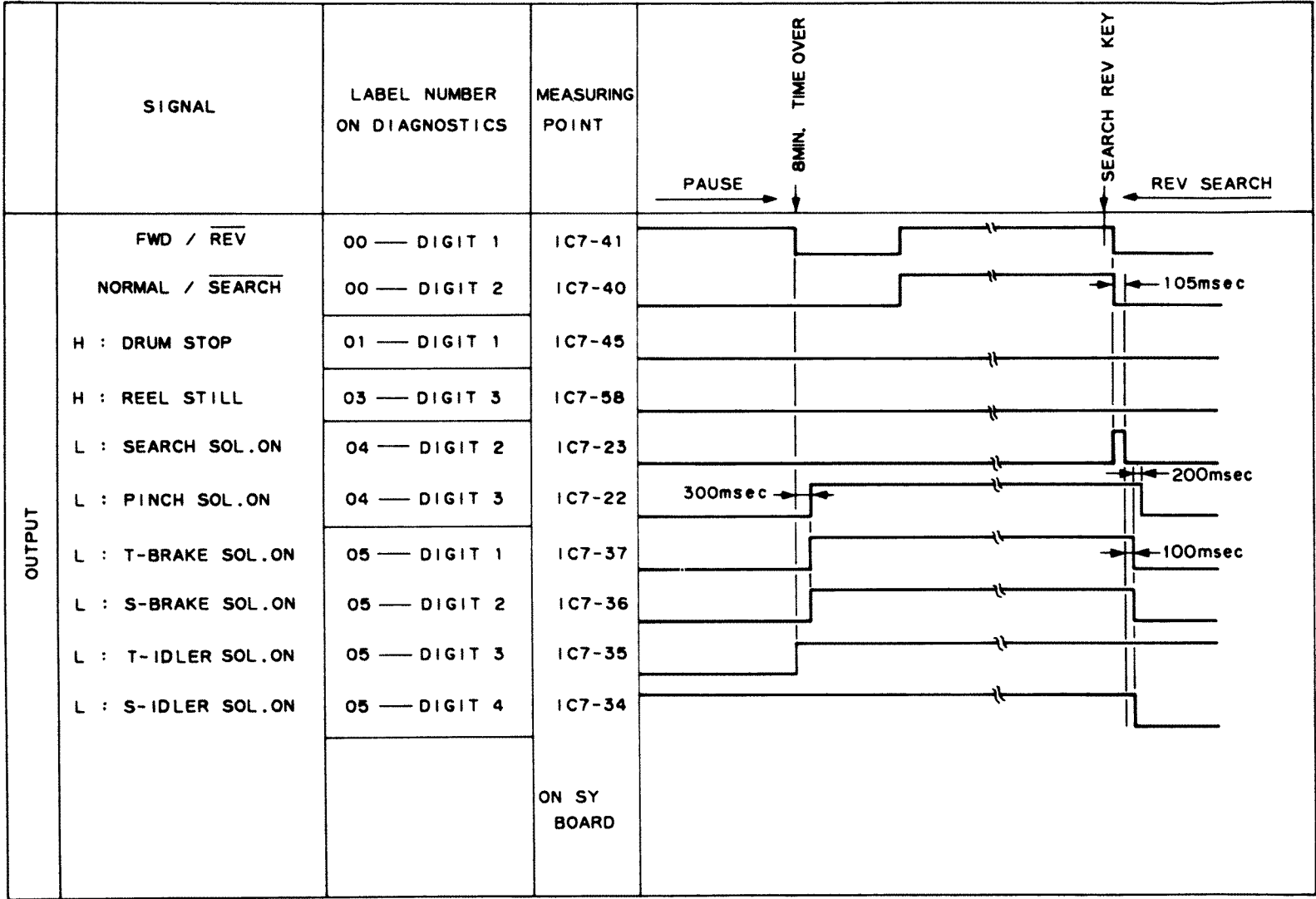
5. PLAY MODE (FR STOP→PLAY→FR STOP)



6. PLAY→FWD SEARCH→SEARCH PAUSE

	SIGNAL	LABEL NUMBER ON DIAGNOSTICS	MEASURING POINT	<div>PLAY → FWD SEARCH KEY ← FWD SEARCH → PAUSE KEY ← PAUSE</div>
INPUT	L : CAPSTAN STOP	0L — DIGIT 1	IC7-8	
OUTPUT	FWD / REV	00 — DIGIT 1	IC7-41	
	NORMAL / SEARCH	00 — DIGIT 2	IC7-40	
	H REEL STILL	03 — DIGIT 3	IC7-58	
	L SEARCH SOL.ON	04 — DIGIT 2	IC7-23	
	L PINCH SOL.ON	04 — DIGIT 3	IC7-22	
	L T-BRAKE SOL.ON	05 — DIGIT 1	IC7-37	
	L S-BRAKE SOL.ON	05 — DIGIT 2	IC7-36	
	L T-IDLER SOL.ON	05 — DIGIT 3	IC7-35	
	L S-IDLER SOL.ON	05 — DIGIT 4	IC7-34	
			ON SY BOARD	

7. PLAY PAUSE→LONG PAUSE→REV SEARCH



8. REV SEARCH→(FWD PAUSE)→FWD SEARCH→(FWD PAUSE)→REV SEARCH

	SIGNAL	LABEL NUMBER ON DIAGNOSTICS	MEASURING POINT	
				SEARCH REV FWD SEARCH KEY FWD SEARCH REV SEARCH KEY REV SEARCH
INPUT	L : CAPSTAN STOP	0L — DIGIT 1	IC7-8	
OUTPUT	FWD / REV	00 — DIGIT 1	IC7-41	
	NORMAL / SEARCH	00 — DIGIT 2	IC7-40	
	H : REEL STILL	03 — DIGIT 3	IC7-58	
	L SEARCH SOL.ON	04 — DIGIT 2	IC7-23	
	L T-BRAKE SOL.ON	05 — DIGIT 1	IC7-37	
	L S-BRAKE SOL.ON	05 — DIGIT 2	IC7-36	
	L T-IDLER SOL.ON	05 — DIGIT 3	IC7-35	
	L S-IDLER SOL.ON	05 — DIGIT 4	IC7-34	
			ON SY BOARD	

2-12. SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the unit to the customer:

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis must not exceed 0.5mA (500 microamperes). Leakage current can be measured by any one of three methods.

- (1) A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturer's instructions to use these instruments.
- (2) A battery-operated AC milliammeter. The Date Precision 245 digital multimeter is suitable for this job.
- (3) Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V; therefore, analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable.

(Refer to Fig. A)

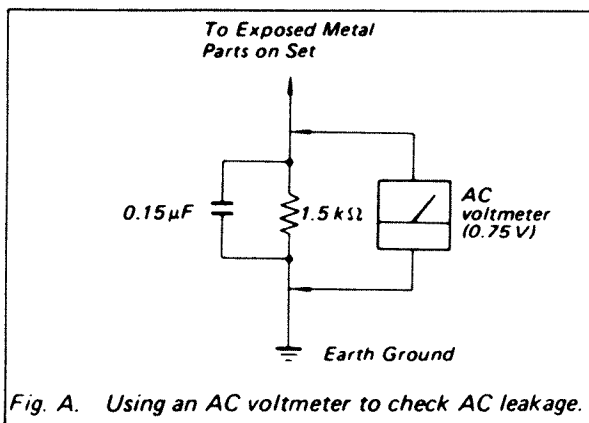


Fig. A. Using an AC voltmeter to check AC leakage.

2-13. FIXTURE

Part No.	Description
J-6001-820-A	Drum Eccentricity Gauge (3)
J-6001-830-A	Drum Eccentricity Gauge (2)
J-6001-840-A	Drum Eccentricity Gauge (1)
J-6001-930-A	Drum Eccentricity Gauge (4)
J-6009-830-A	Flatness Plate
J-6026-240-A	Adjustment Driver
J-6130-010-A	Reel Table Height Check Base Jig
J-6130-020-A	Reel Table Height Check Jig
J-6153-020-A	Dihedral Adjustment Driver
J-6150-140-A	Eccentricity Screwdriver
J-6153-580-A	Pinch Lever Adjustment Jig
Y-2031-001-0	Cleaning Fluid
2-034-697-00	Cleaning Piece
3-702-216-01	Back Tension Adjustment Jig
7-661-018-01	Sony Oil
7-700-736-01	L-Shaped Hexagonal Wrench (across flat has 1.27 mm)
7-700-736-05	L-Shaped Hexagonal Wrench (across flat has 1.5 mm)
7-732-050-20	Tension Scale (50g)
7-732-050-30	Tension Scale (100g)
7-732-050-40	Tension Scale (200g)
7-732-050-50	Tension Scale (500g)
8-899-999-53	Torque Measurement Tape
8-960-015-04	Alignment Tape, RR5-3SA NTSC
8-960-035-61	Alignment Tape, RR5-2SC PAL
9-911-053-00	Thickness Gauge

SECTION 3

PERIODIC CHECK AND MAINTENANCE

It is recommended that the following maintenance and the periodic check be performed as referring to the Hours Meter of the front panel for the best operation of the function and performance of the unit and for prolonging the live of the unit and the tape.

3-1. MAINTENANCE AFTER REPAIRS

Perform the following maintenance after repairs regardless of the operating hours of the unit.

(1) Cleaning of the video heads

- . Press a cleaning piece moistened with cleaning fluid to the drum and turn it slowly with the hand. (Never turn the motor with electric power to clean.)
- . Never move the cleaning piece in a vertical direction of the head tip during cleaning. It might damage the head tips.

(2) Cleaning of the tape path system

- . Wipe the tape bearing surfaces (such as tape guides, drum, capstan, and pinch roller) with a cleaning piece moistened with cleaning fluid.

(3) Cleaning of the drive system

- . Wipe the drive system (such as belt, idler, and reel table surface) with a cleaning piece moistened with cleaning fluid.

3-2. PERIODIC CHECK

Perform the maintenance checks described separately in accordance with the operational hours of the unit.

3-3. OTHERS

(1) Sony Oil

- . Be sure to use Sony Oil as the lubrication oil. (If any other oil is used, various troubles might occur because of different viscosity.)

Sony Oil : Part No. 7-661-018-01

- . Use Sony Oil in which dust or other foreign material have not been mixed for lubricating the bearing. (If foreign material is in the oil, wear or burning of the bearing might occur.)

(2) Grease

Be sure to use the following grease.

Sony grease : Part No. 7-662-001-62 (SGL-501)

(3) Overhauling of the equipment

When overhauling the equipment is attempted, replace parts at the intervals indicated in the chart on page 3-2. For parts not in the list, such as motors and heads, refer the following items. (It suppose the usually state of use.)

- . Reel motor : about 3,000 H
- . Capstan motor : about 3,000 H
- . Threading motor : about 30,000 times
- . Cassette-up compartment motor
: about 30,000 times
- . Audio/CTL head : about 3,000 H
- . CTL head : about 3,000 H

■ : apply oil ○ : cleaning ◆ : replace ◇ : check ◎ : apply grease

Item	Operating Hours (H)		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
	Part No. of Replacement Parts												
Tape path cleaning	—	○	○	○	○	○	○	○	○	○	○	○	Perform whenever repair work is attempted *NOTE 1
Cleaning and replacement of the video head	A-6709-602-A	○	◆	○	◆	○	◆	○	◆	○	◆	○	Life of the video heads are affected extensively by operating ambient conditions *NOTE 2
Replacement of pinch roller	A-6750-226-A	○	◆	○	◆	○	◆	○	◆	○	◆	○	Life of the pinch roller are affected extensively by operating systems *NOTE 3.
Replacement of the F FWD/REW idler belt	X-3646-026-0	○	○	○	◆	○	○	○	◆	○	○	○	—
Replacement of the reel table	A-6739-017-A	○	■	○	◆	○	■	○	◆	○	■	○	—
Replacement of R brake shoe	X-3668-737-0	—	—	—	◆	—	—	—	◆	—	—	—	—
Replacement of brake band	X-3668-707-0	—	—	—	◆	—	—	—	◆	—	—	—	—
Replacement of belt on gear box	3-672-737-01	○	○	○	○	○	○	○	◆	○	○	○	—
Replacement of belt on cassette-up compartment	3-653-387-00	○	○	○	○	○	○	○	◆	○	○	○	—
Cleaning the threading roller shaft on the threading ring	—	—	○	—	○	—	○	—	○	—	○	○	Clean with a cloth moistened with cleaning fluid *NOTE 4
Apply a grease on the ring rollers	—	—	◎	—	◎	—	◎	—	◎	—	◎	◎	Apply grease on the surface of the ring roller
Check the FWD back tension	—	—	◇	—	◇	—	◇	—	◇	—	◇	◇	*NOTE 5
Check the FWD torque	—	—	◇	—	◇	—	◇	—	◇	—	◇	◇	*NOTE 6
Check the REV torque	—	—	◇	—	◇	—	◇	—	◇	—	◇	◇	*NOTE 7
Check the brake torque	—	—	—	—	◇	—	◇	—	◇	—	◇	◇	*NOTE 8

*NOTE 1 :Refer to Section 3-1.

*NOTE 2 :Refer to Section 3-1.

*NOTE 3 :After this replacement, perform the adjustments as follows:
Section 4-9 "Pinch Roller Replacement".

*NOTE 4 :Refer to Section 4-6.

*NOTE 5 :Refer to Section 6-6.

*NOTE 6 :Refer to Section 6-3.

*NOTE 7 :Refer to Section 6-4.

*NOTE 8 :Refer to Section 6-1.

SECTION 4

REPLACEMENT OF MAJOR PARTS

4-1. REPLACEMENT OF THE UPPER DRUM

- The Rotary Video Heads cannot be replaced individually. The entire Upper Drum Assembly should be replaced when any of these heads fails.

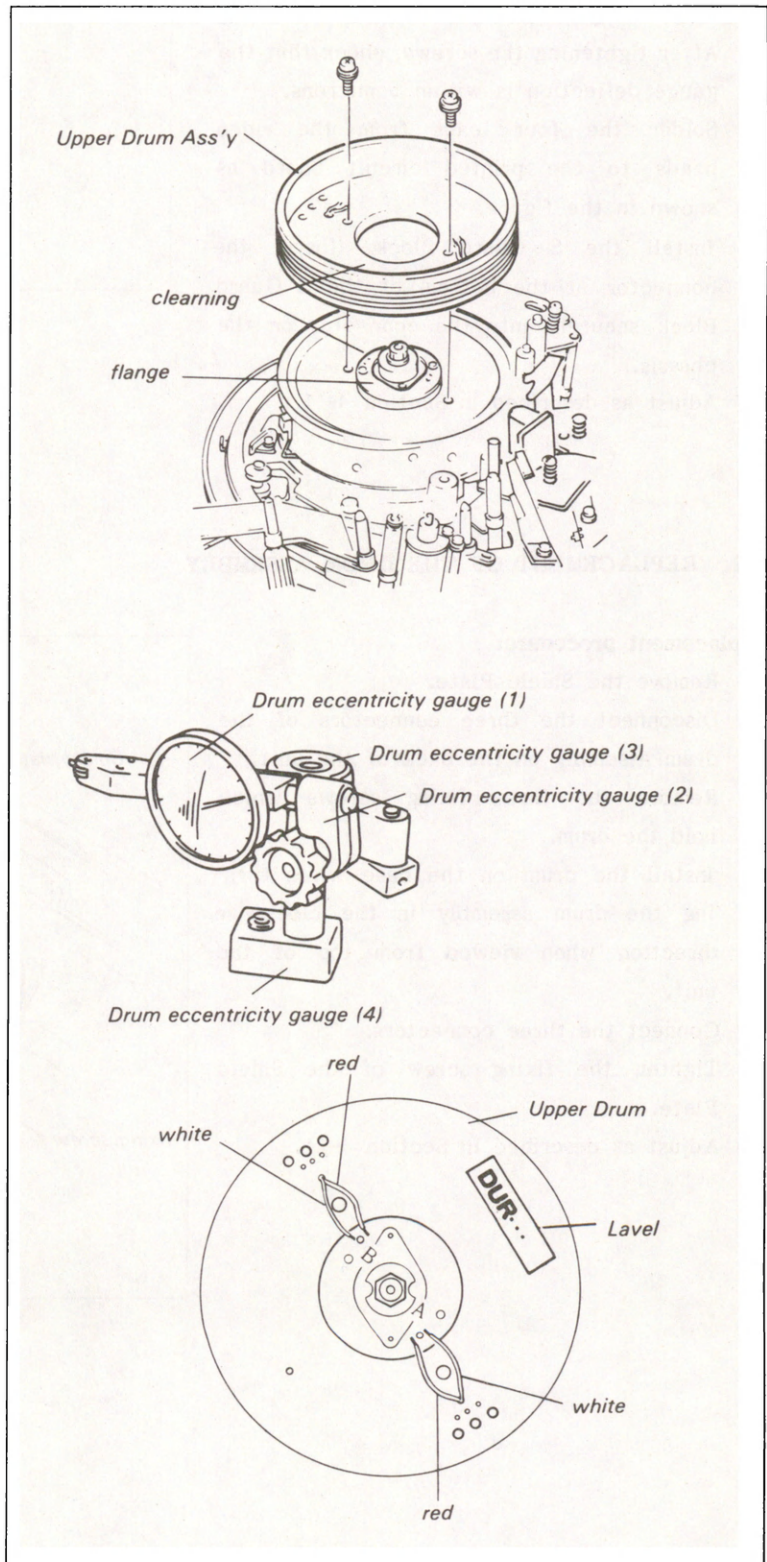
Tool: Drum eccentricity gauge (1)
Drum eccentricity gauge (2)
Drum eccentricity gauge (3)
Drum eccentricity gauge (4)

Replacement procedure:

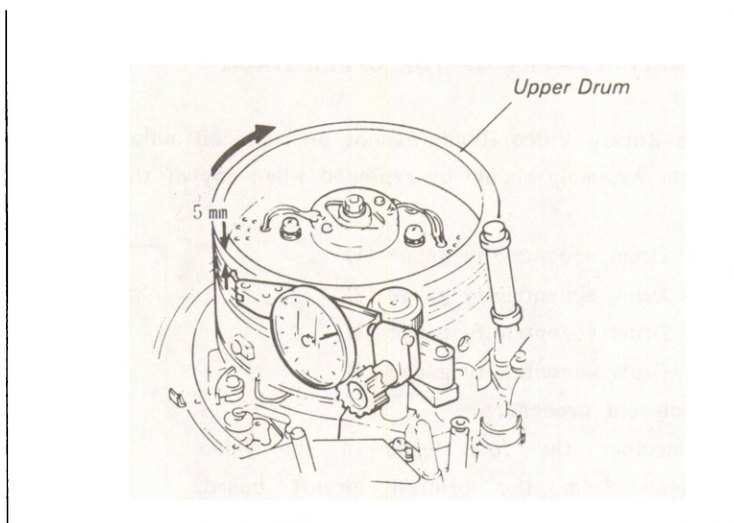
- (1) Unsolder the four leads of the video head from the printed circuit board. Remove the two fixing screws and then remove the Upper Drum Assembly from the Head Drum Assembly.
- (2) Clean the matching surfaces of the flange and new Upper Drum Assembly with a cloth moistened with cleaning fluid. (If there is a spacer between the drum and the flange, it should be left on the flange. If the spacer is lost, correct interchangeability cannot be obtained.)
- (3) Place the Upper Drum Assembly as shown in the figure. Thread the two fixing screws snugly but do not tighten them.

Adjustment procedure:

- (1) Remove the S Guard Block. (The connector at the bottom of the S Guard is inserted into the connector on the chassis.)
- (2) Assemble the Drum Eccentricity Gauges (1), (2), (3) and (4) as shown in the figure. Set the assembled gauges on the unit so that the probe tip is positioned at a point about 5 mm from the top edge of the Upper Drum.
- (3) Turn the Upper Drum slowly in the clockwise direction and check that the gauge deflection is within 5 microns during one complete revolution of the Upper Drum. If it is within specification, proceed with the Step (5). If it is not, perform Step (4).



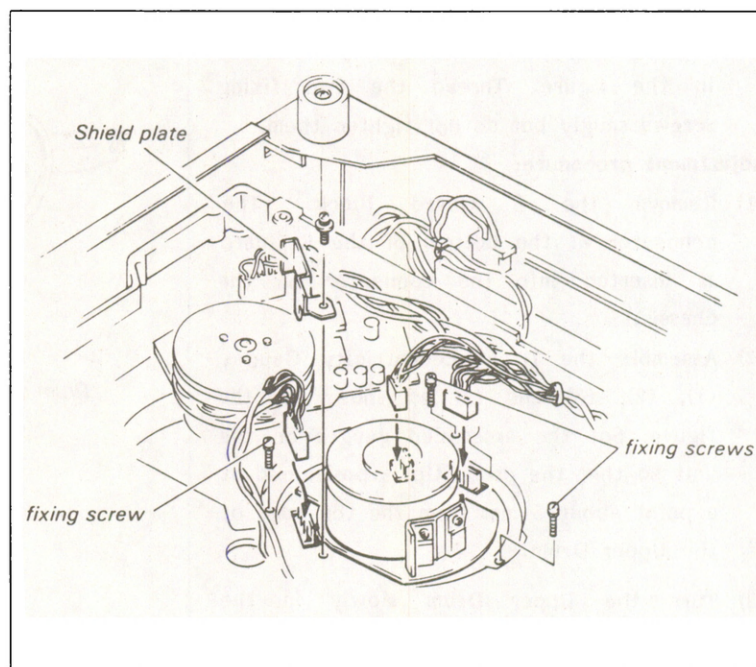
- (4) Tap the inside of the Upper Drum with a nylon hammer or a screwdriver handle until the gauge deflection remains within 5 microns.
- (5) After the adjustment, alternately tighten the two fixing screws of the Upper Drum. (Tightening torque: 14 to 16 kg-cm)
- (6) After tightening the screws, check that the gauge deflection is within 5 microns.
- (7) Solder the four leads from the video heads to the printed circuit board as shown in the figure.
- (8) Install the S Guard Block. (Insert the connector at the bottom of the S Guard Block securely into the connector on the chassis.)
- (9) Adjust as described in Section 4-11.



4-2. REPLACEMENT OF THE DRUM ASSEMBLY

Replacement procedure:

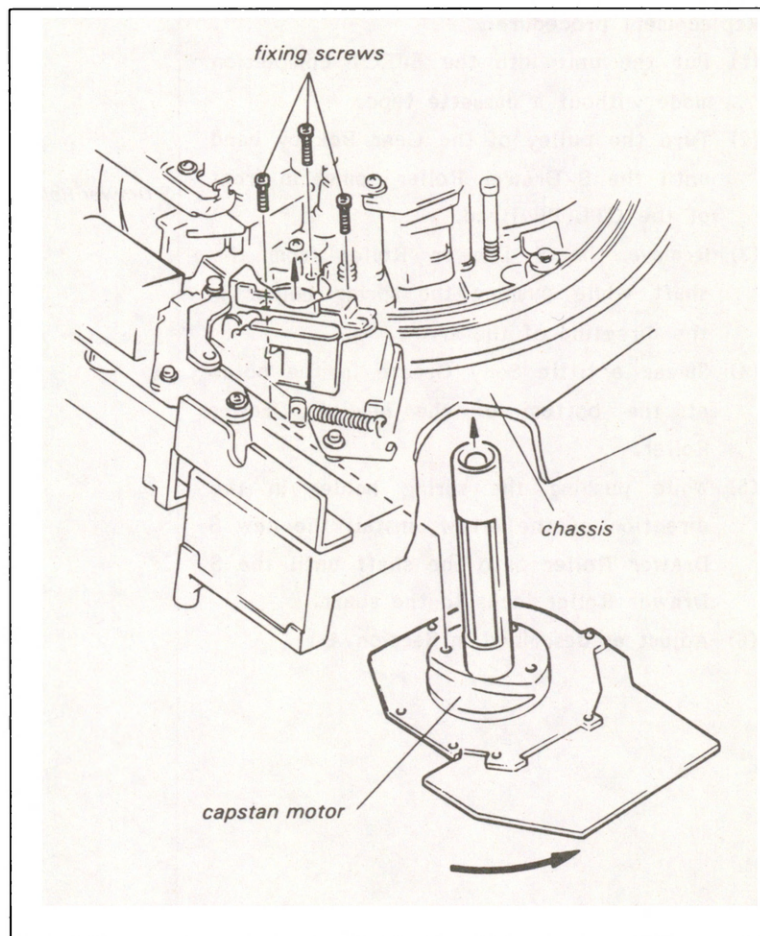
- (1) Remove the Shield Plate.
- (2) Disconnect the three connectors of the drum assembly on the back of the unit.
- (3) Remove the three fixing screws which hold the drum.
- (4) Install the drum on the base while turning the drum assembly in the clockwise direction when viewed from top of the unit.
- (5) Connect the three connectors.
- (6) Tighten the fixing screw of the Shield Plate.
- (7) Adjust as described in Section 4-11.



4-3. REPLACEMENT OF THE CAPSTAN MOTOR

Replacement procedure:

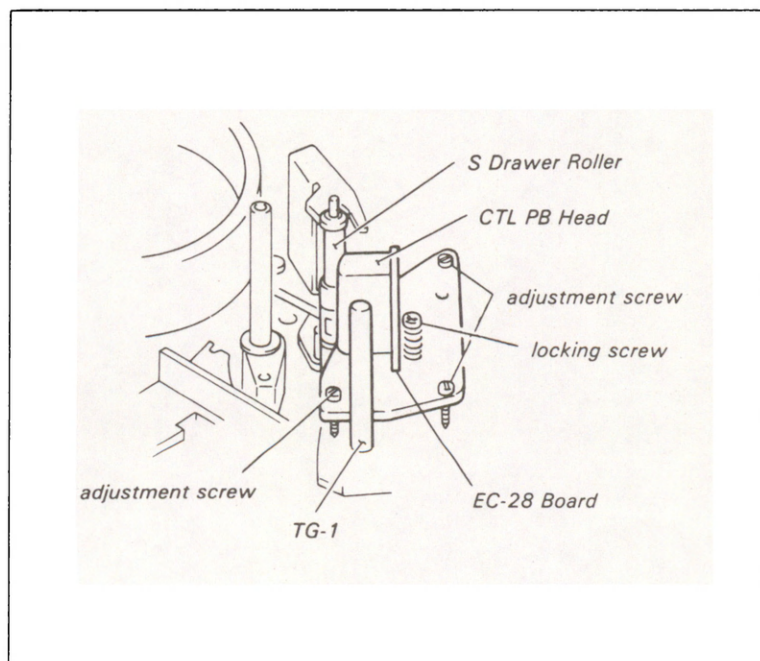
- (1) Remove the Capstan Motor from the unit.
- (2) Install the new Capstan Motor and thread the three fixing screws snugly but do not tighten them.
- (3) Tighten the fixing screws while turning the Capstan Motor in the direction of the arrow.
- (4) Adjust as described in Section 4-11.



4-4. REPLACEMENT OF THE CTL HEAD

Replacement procedure:

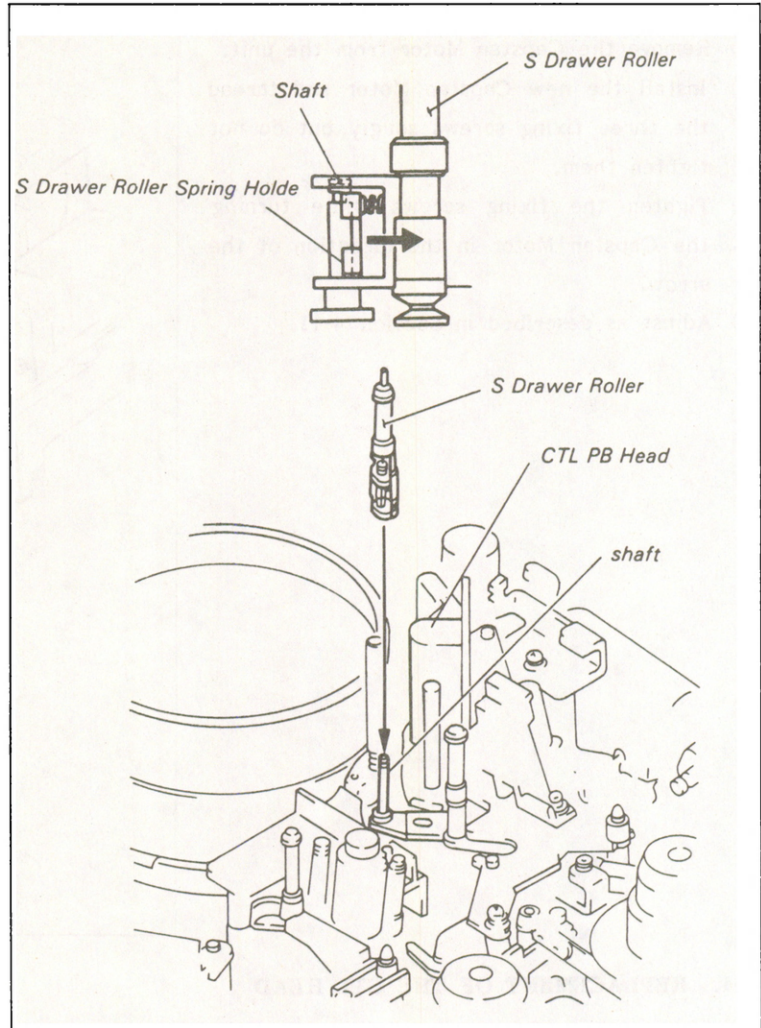
- (1) Disconnect CN341 on the EC-28 Board.
- (2) Remove the locking screw and remove the CTL PB Head Block from the unit. Never tighten or loosen the three adjustment screws.
- (3) Remove the two fixing screws at the bottom of the bracket and remove the head.
- (4) Remove the EC-28 Board from the head and solder it to the new head.
- (5) Perform steps (1) to (3) in reverse order.
- (6) Adjust as described in Section 4-11.



4-5. REPLACEMENT OF THE S DRAWER ROLLER

Replacement procedure:

- (1) Put the unit into the EJECT completion mode without a cassette tape.
- (2) Turn the pulley of the Gear Box by hand until the S Drawer Roller comes in front of the CTL PB Head.
- (3) Remove the S Drawer Roller from the shaft while pushing the spring holder in the direction of the arrow.
- (4) Smear a little Sony Grease in the notch at the bottom of the new S Drawer Roller.
- (5) While pushing the spring holder in the direction of the arrow, install the new S Drawer Roller onto the shaft until the S Drawer Roller locks to the shaft.
- (6) Adjust as described in Section 4-11.



4-6. REPLACEMENT / ADJUSTMENT OF THE TAPE GUIDES ON THE THREADING RING

. There are three tape guides on the Threading Ring. This section describes the replacement of the three tape guides and the width adjustment of the two tape guides.

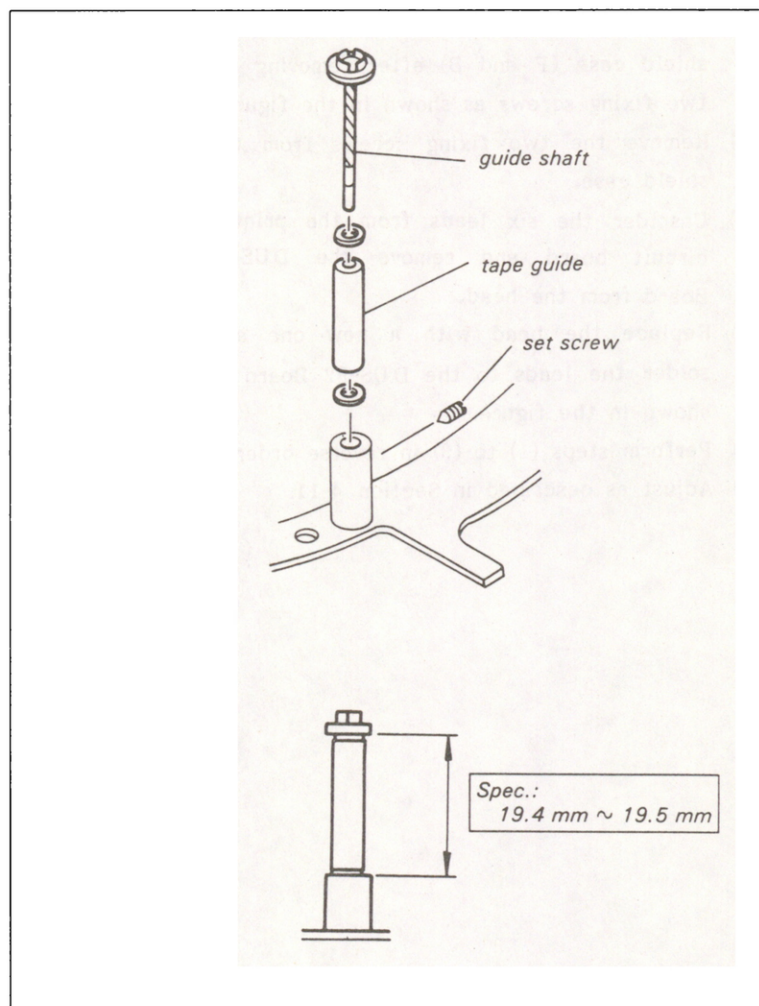
tool: slide vernier callipers or equivalent
L-shaped hexagonal wrench
(across flat has 1.27 mm)

Replacement procedure:

- (1) Loosen the set screw of the boss and remove the guide shaft.
- (2) Clean the guide shaft with a cloth moistened with cleaning fluid.
- (3) Assemble the guide.
- (4) Adjust the height of the sub-ring guide as shown in the figure.
- (5) Adjust as described in Section 4-11.

Adjustment procedure:

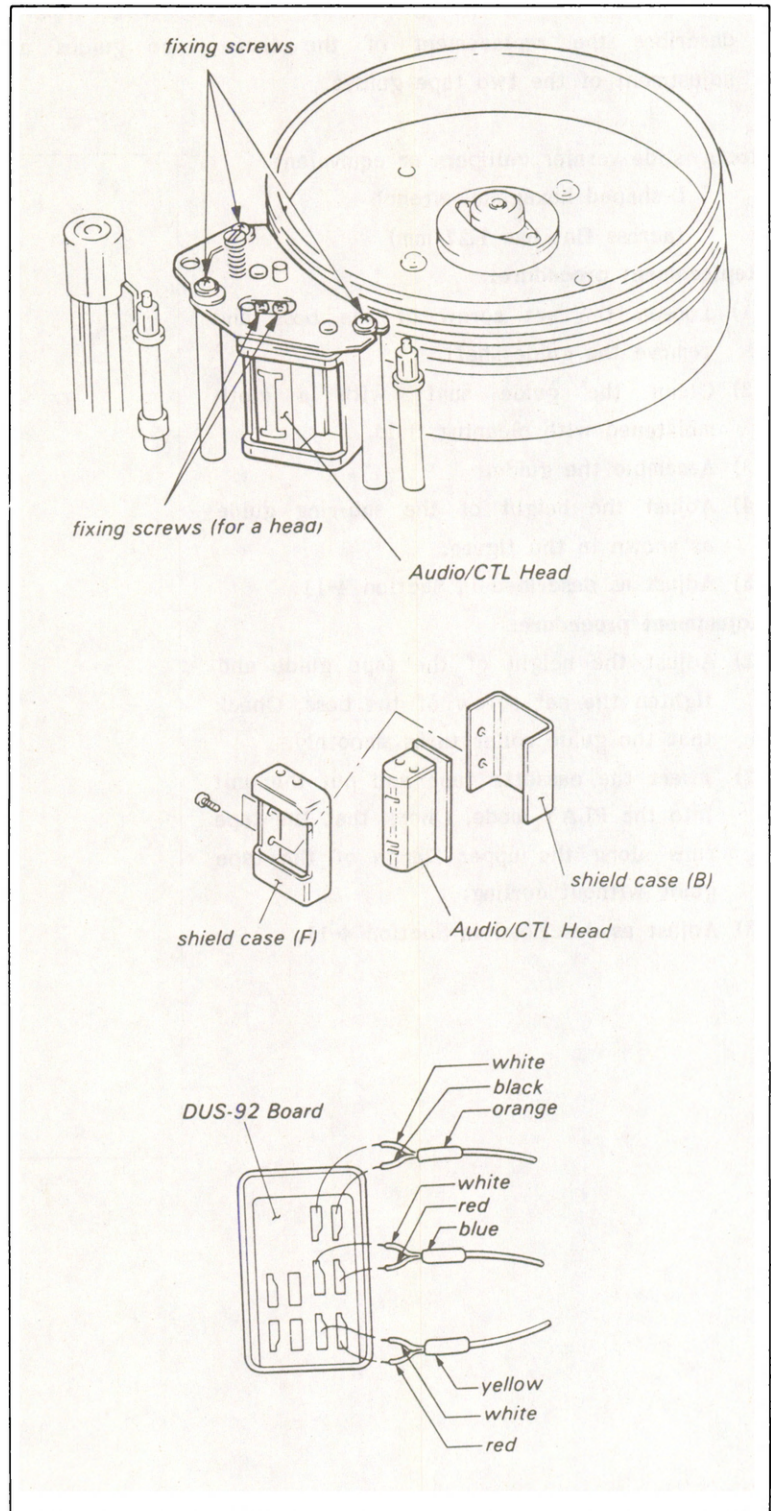
- (1) Adjust the height of the tape guide and tighten the set screw of the boss. Check that the guide roller turns smoothly.
- (2) Insert the cassette tape and put the unit into the PLAY mode. Check that the tape runs along the upper flange of the tape guide without curling.
- (3) Adjust as described in Section 4-11.



4-7. REPLACEMENT OF THE AUDIO/CTL HEAD

Replacement procedure:

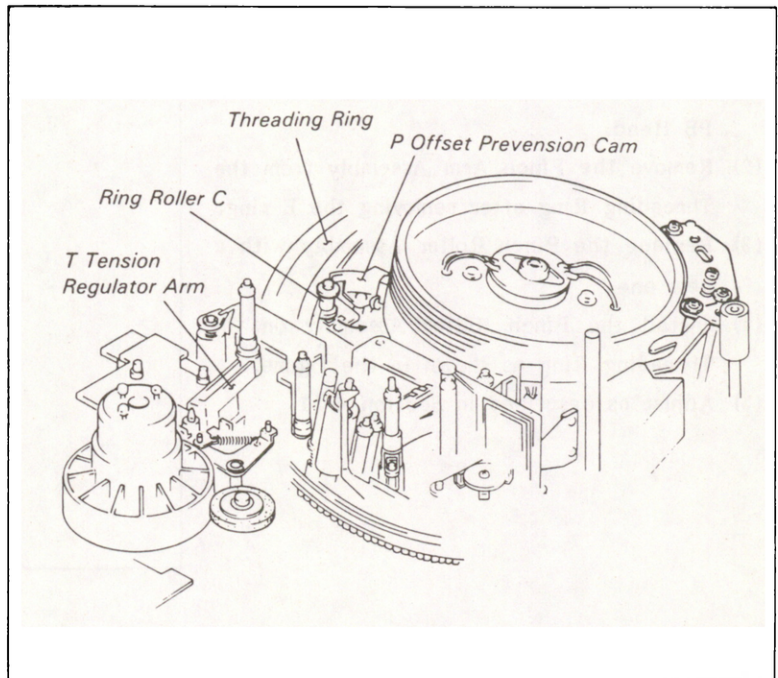
- (1) Remove the Audio/CTL Head Block from the unit after removing the three fixing screws as shown in the figure.
- (2) Remove the Audio/CTL Head and the shield case (F and B) after removing the two fixing screws as shown in the figure.
- (3) Remove the two fixing screws from the shield case.
- (4) Unsolder the six leads from the printed circuit board and remove the DUS-92 Board from the head.
- (5) Replace the head with a new one and solder the leads to the DUS-92 Board as shown in the figure.
- (6) Perform steps (1) to (3) in reverse order.
- (7) Adjust as described in Section 4-11.



4-8. REPLACEMENT OF THE THREADING RING

Replacement procedure:

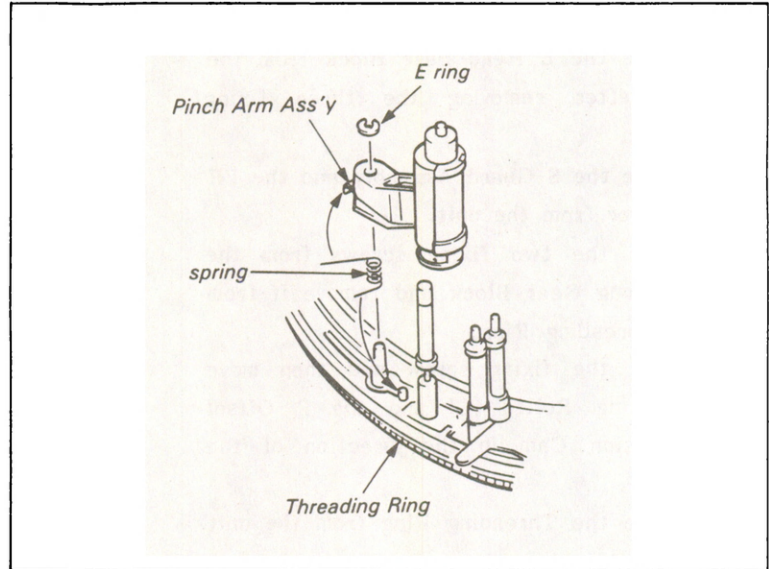
- (1) Remove the E Head Base Block from the unit after removing the three fixing screws.
- (2) Remove the S Guard Assembly and the FR Detector from the unit.
- (3) Loosen the two fixing screws from the Threading Gear Block and remove it from the Threading Ring.
- (4) Loosen the fixing screw and then move the Ring Roller (C) and the P Offset Prevention Cam in the direction of the arrow.
- (5) Remove the Threading Ring from the unit and replace it with a new one.
- (6) Perform steps (1) to (4) in reverse order.
- (7) Adjust as described in Section 4-11.



4-9. REPLACEMENT OF THE PINCH ROLLER

Replacement procedure:

- (1) Turn the pulley of the Gear Box until the S Drawer Roller is in front of the CTL PB Head.
- (2) Remove the Pinch Arm Assembly from the Threading Ring after removing the E ring.
- (3) Replace the Pinch Roller Assembly with a new one.
- (4) Install the Pinch Roller Assembly on the Threading Ring as shown in the figure.
- (5) Adjust as described in Section 4-11.

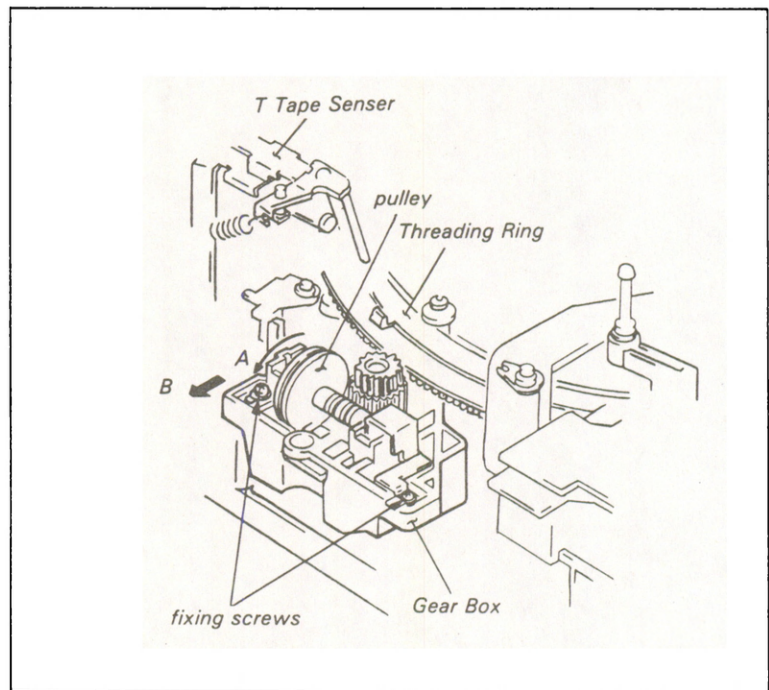


4-10. REPLACEMENT OF THE THREADING GEAR BOX SYSTEM

4-10-1. Replacement of the Threading Gear Box

Replacement procedure:

- (1) Put the unit into the EJECT mode and turn the power OFF.
- (2) Remove the T Tape Sensor from the gear box after removing the fixing screw.
- (3) Remove the two fixing screws of the gear box after turning the pulley 1 revolution in the direction of arrow A, Move the gear box in the direction of arrow B and remove it from the unit.
- (4) Remove the harness from the clamper and disconnect CN511 from the SY-106B Board.
- (5) Replace the gear box with a new one.
- (6) Perform steps (3) and (4) in reverse order.
- (7) Put the gear box on the chassis and thread the two fixing screws snugly but do not tighten them. Tighten the two fixing screws of the gear box after meshing the Threading Ring to the gear.
- (8) Adjust as described in Section 4-11.

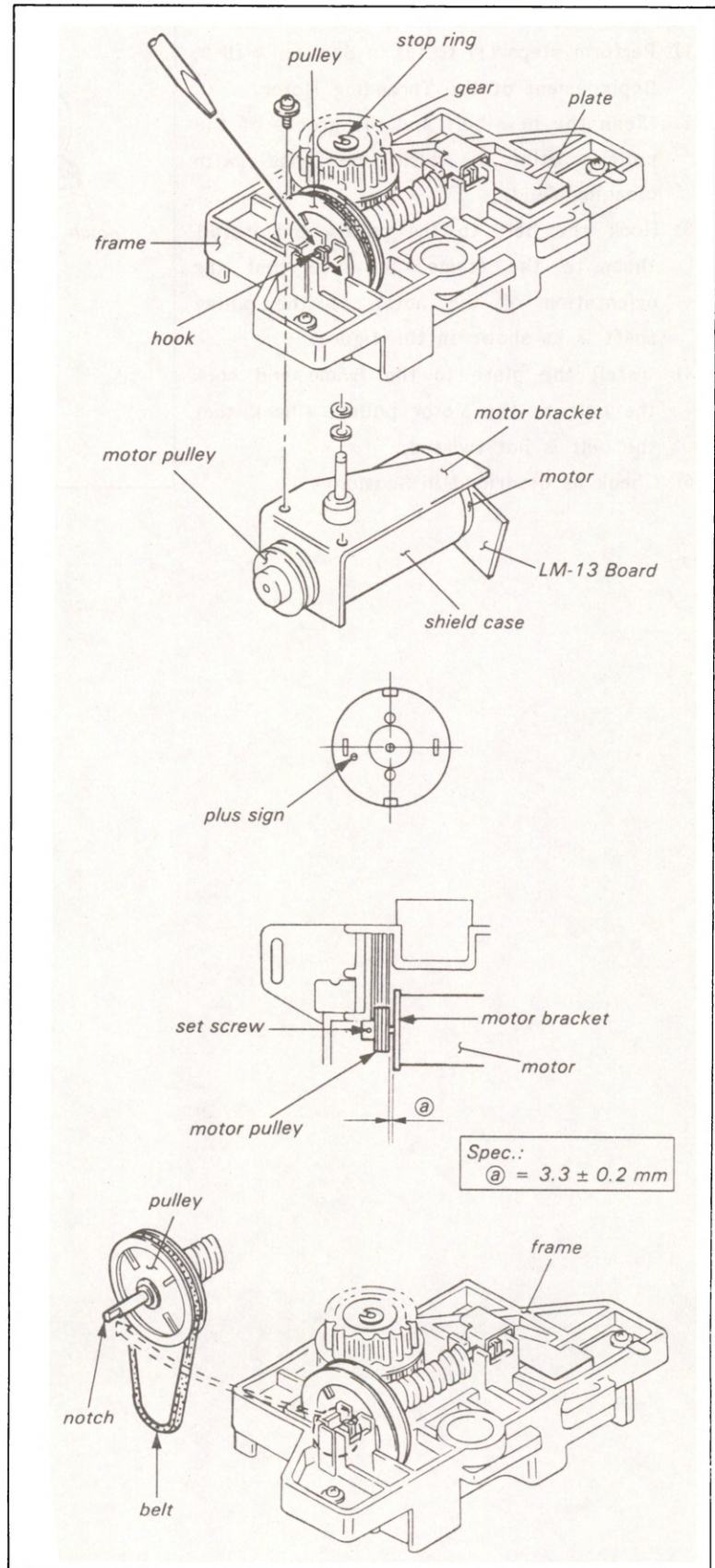


4-10-2. Replacement of the Threading Motor

Tool: L-shaped hexagonal wrench
(across flat has 1.5 mm)

Replacement procedure:

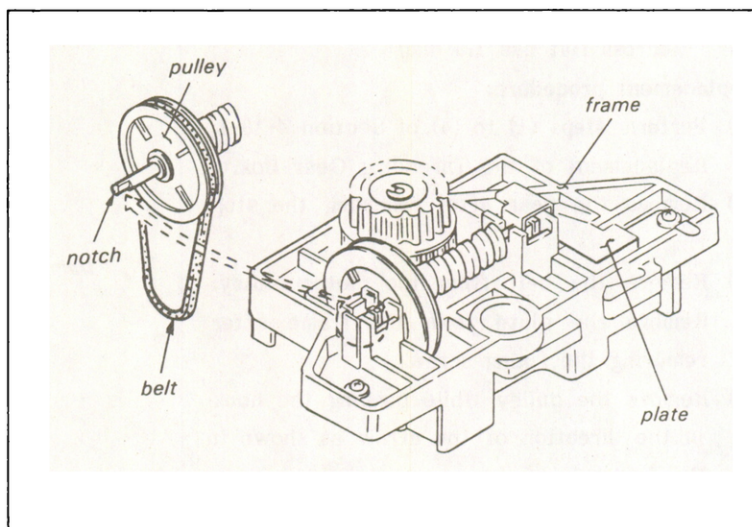
- (1) Perform steps (1) to (4) of Section 4-10-1, Replacement of the Threading Gear Box.
- (2) Remove the gear after removing the stop ring.
- (3) Remove the belt from the motor pulley. Remove the plate from the frame after removing the fixing screw.
- (4) Remove the pulley while pushing the hook in the direction of the arrow as shown in the figure.
- (5) Remove the motor block from the frame after removing the two fixing screws.
- (6) Loosen the set screw and remove the motor pulley.
- (7) Remove the motor from the motor bracket after removing the two fixing screws.
- (8) Remove the shield case and unsolder the LM-13 Board. Replace the motor with a new one.
- (9) The pole of the motor is as shown in the figure. Solder the plus terminal of the motor to the plus pad of the LM-13 Board.
- (10) Install the shield case to the motor.
- (11) Install the motor to the frame as shown in the figure. Perform steps (4) to (6) in reverse order. Check that the clearance between the motor pulley and the bracket meets the required specification.
- (12) Hook the belt to the pulley and install the pulley on the frame. Be sure that the orientation of the notch of the pulley shaft is as shown in the figure.
- (13) Hook the belt to the motor pulley. Check that the belt is not twisted.
- (14) Check as described in Section 4-11.



4-10-3. Replacement of the Threading Belt

Replacement procedure:

- (1) Perform steps (1) to (3) in Section 4-10-2, Replacement of the Threading Motor.
- (2) Clean the new belt and the groove of the pulley with a cloth moistened with cleaning fluid.
- (3) Hook the belt to the pulley and install them to the frame. Be sure that the orientation of the notch of the pulley shaft is as shown in the figure.
- (4) Install the plate to the frame and hook the belt to the Motor pulley. Check that the belt is not twisted.
- (5) Check as described in Section 4-11.



4-11. ITEMS TO BE ADJUSTED AFTER MAIN PARTS REPLACEMENT

(Numbers in parenthesis refer to Section Nos.)

Replacement of Threading Ring

Threading Ring Rotation Adjustment (5-3-1) → Gear Box Position Adjustment (5-3-2) → FR Detector Block Mounting Position Adjustment (5-3-4) → Pinch Roller Position Adjustment (5-3-3) → Pinch Lever Pre-set Adjustment (5-4-1) → Pinch Roller Pre-set Adjustment (5-4-2) → Leaf Spring Position Adjustment (5-9) → F FWD/REW Modes Tape Path Adjustment (7-1) → T Correction Guide Slantness Adjustment (7-2) → Tape Path Adjustment Around Pinch Roller (7-6) → PLAY Mode Tape Path Adjustment (1) (7-3) → PLAY Mode Tape Path Adjustment (2) (7-4) → REV Mode Tape Path Adjustment (7-5) → Video Tracking Adjustment (7-7-1) → CTL PB Head Height/Azimuth/Zenith Adjustments (7-7-2) → Video Tracking Adjustment (check) (7-7-1)

Replacement of Pinch Roller

Pinch Roller Self Alignment Adjustment (5-3-3) → Pinch Roller Pre-set Adjustment (5-4-2) → PLAY Mode Tape Path Adjustment (2) (7-4) → REV Mode Tape Path Adjustment (7-5) → Tape Path Adjustment Around Pinch Roller (7-6) → Video Tracking Adjustment (check)(7-7-1)

Replacement of Take-up Reel Table

Reel Table Height and Vertical Play Adjustment (5-1-2) → T Brake Torque Adjustment (6-1-2) → REW Brake Torque Adjustment (6-1-3) → F FWD/REW Torque Adjustment (6-2) FWD Torque Adjustment (6-3) → F FWD/REW Modes Tape Path Adjustment (7-1)

Replacement of Supply Reel Table

Reel Table Height and Vertical Play Adjustment (5-1-2) → S Brake Torque Adjustment (6-1-1) → F FWD/REW Torque Adjustment (6-2) → REV Torque Adjustment (6-4) → FF Back Tension Adjustment (6-5) → FWD Back Tension Adjustment (6-6) → Video Tracking Adjustment (check) (7-7-1)

Replacement of Brake Band

FF Back Tension Adjustment (6-5) → FWD Back Tension Adjustment (6-6)

Replacement of Capstan Motor

Pinch Lever Right Angle Adjustment (5-10) → Pinch Roller Self Alignment Adjustment (5-3-3) → Capstan Search Speed Adjustment → Capstan FWD/REV Detector Adjustment → Capstan Free Speed Adjustment → Capstan Stop Servo Adjustment → PLAY Mode Tape Path Adjustment (2) (7-4) → REV Mode Tape Path Adjustment (7-5) → Tape Path Adjustment Around Pinch Roller (7-6) → Video Tracking Adjustment (check)(7-7-1)

Replacement of Threading Motor

Gear Box Position Adjustment (5-3-2)

Replacement of Reel Motor

FWD Torque Adjustment (6-3) → REV Torque Adjustment (6-4)

Replacement of CTL PB Head

CTL PB Head Height/AZimuth/Zenith Adjustments (7-7-2) → Video Tracking Adjustment (check) (7-7-1)

Replacement of Audio/CTL Head

Audio Head Height Adjustment (7-7-3) → Audio Head Azimuth Adjustment (7-7-5) → Video Tracking Adjustment (7-7-1) → Audio Head Height Adjustment (7-7-3) → Audio Head Azimuth Adjustment (7-7-5) → Audio Head Phase Adjustment (7-7-6) → Audio/CTL Head Position Adjustment (7-7-7) → Audio System Alignment (all of Section 10)

Replacement of Drum Assembly

Tracking Adjustment (7-7) → F FWD/REW Modes Tape Path Adjustment (7-1) → PLAY Mode Tape Path Adjustment (2) (7-4) → REV Mode Tape Path Adjustment (7-5) → Video Head Dihedral Adjustment (7-8) → Drum AFC Level Adjustment → Drum AFC Transient Adjustment → Switching Position Adjustment

Replacement of Upper Drum Assembly

Replacement of Upper Drum (4-1) → Tracking Adjustment (7-7) → F FWD/REW Modes Tape Path Adjustment (7-1) → PLAY Mode Tape Path Adjustment (2) (7-4) → REV Mode Tape Path Adjustment (7-5) → Video Head Dihedral Adjustment (7-8) → PB RF Amplifier Adjustment

SECTION 5

LINK AND DRIVE SYSTEM ALIGNMENT

5-1. REEL TABLE SYSTEM ADJUSTMENT

5-1-1. Cassette Holder Position Adjustment

Tool: Reel table height check base jig
Thickness gauge
L-shaped hexagonal wrench
(across flat has 1.27 mm)

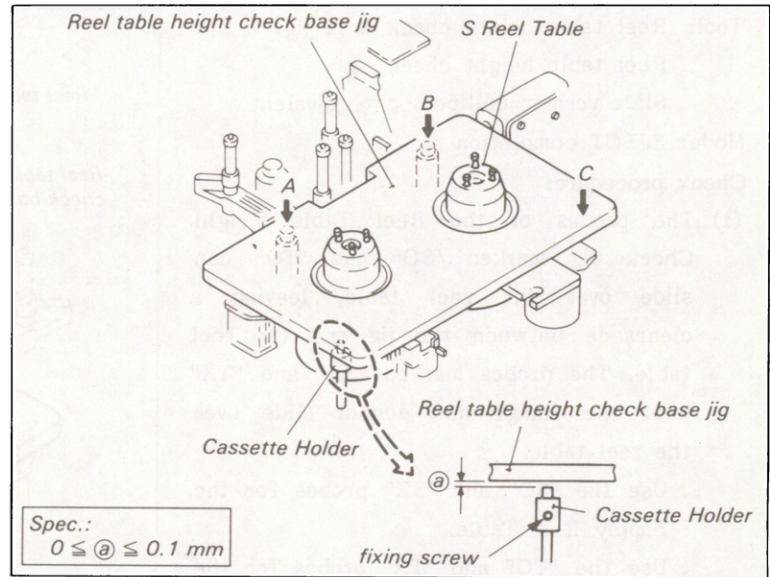
Mode: EJECT completion

Check procedure:

- (1) While lightly pushing the Reel Table Height Check Base Jig marked (A), (B) and (C) toward the chassis, check that the clearance between the base jig and the cassette holder meets the required specification.

Adjustment procedure:

- (1) Adjust the position of the Cassette Holder to meet the required specification.



5-1-2. Reel Table Height and Vertical Play Adjustment

- . The height of the reel table is the reference for the tape threading system and the tape path system. This Adjustment should be performed very carefully.

Tool: Reel table height check base jig
Reel table height check jig
Slide vernier callipers or equivalent

Mode: EJECT completion

Check procedure:

- (1) The probes of the Reel Table Height Check Jig marked "SO" and "TO" can slide over the reel table, leaving a clearance between the jig and the reel table. The probes marked "SX" and "TX" meet the flange and cannot slide over the reel table.
 - . Use the "SO" and "SX" probes for the Supply Reel Table.
 - . Use the "TO" and "TX" probes for the Take-up Reel Table.
- (2) After tighten the fixing screw of the top of the reel table, push up and press down the reel table. Check that the vertical play meets the required specification.

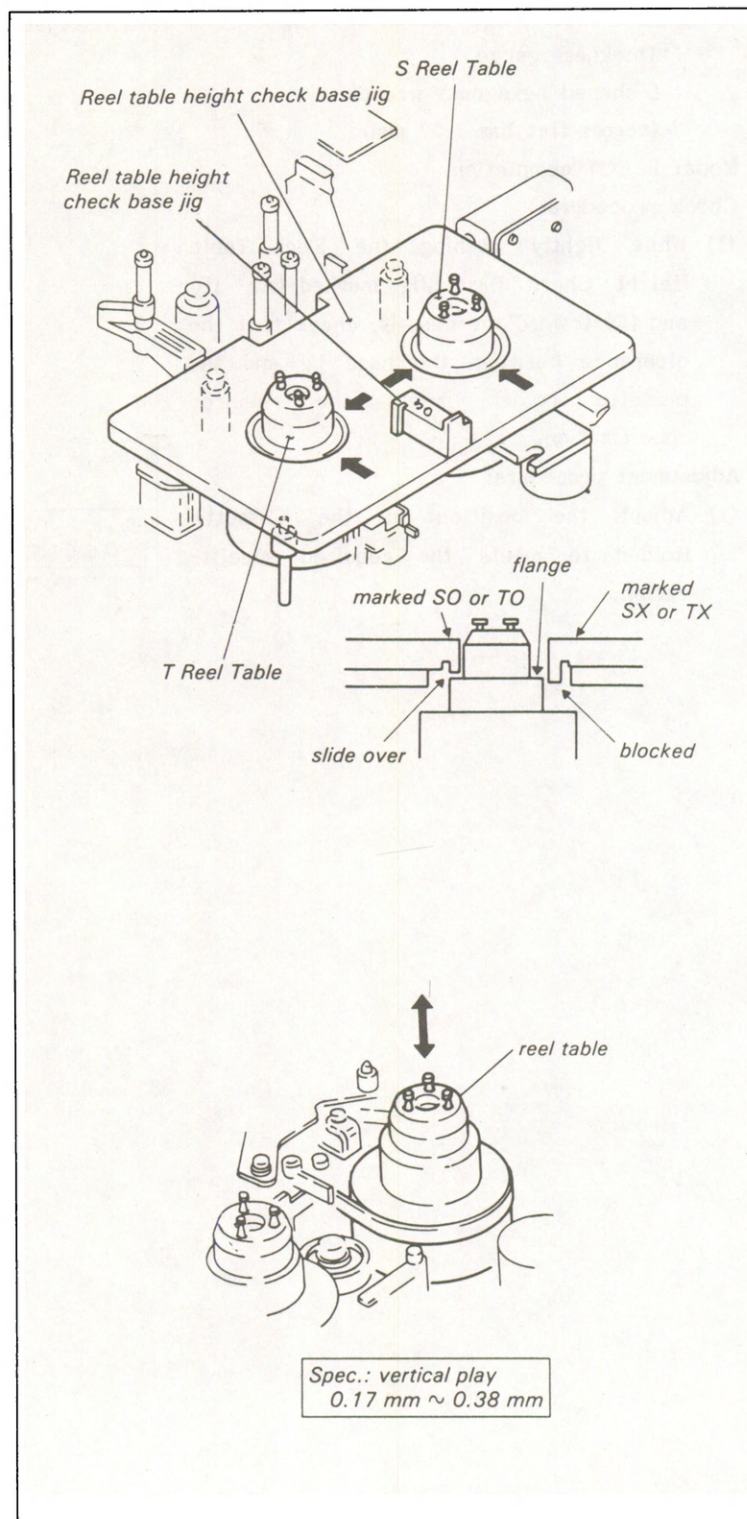
Adjustment procedure:

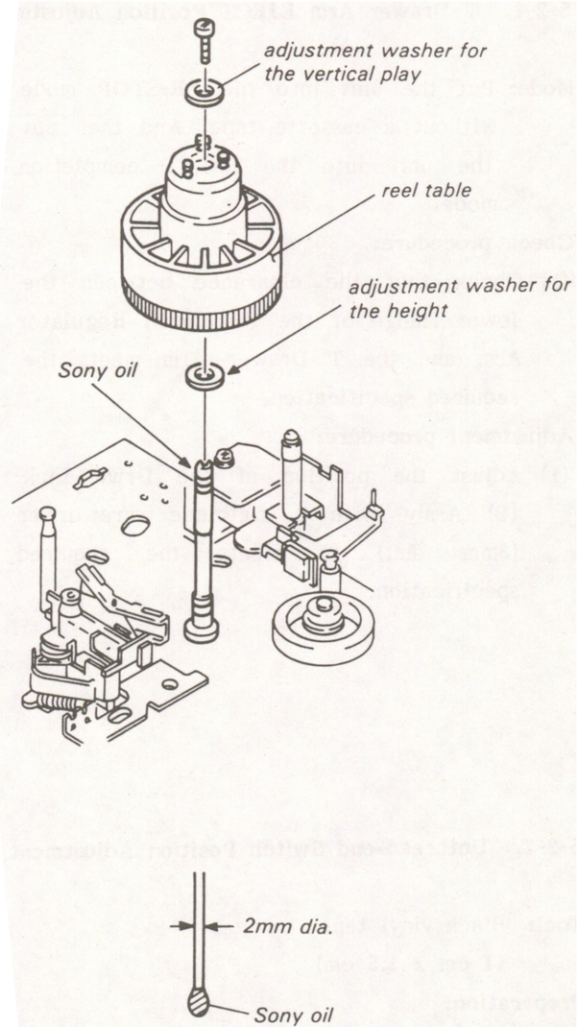
- (1) Place the washer under the reel table and adjust the height of the reel table.
- (2) Place the washer on the reel table and adjust the vertical play of the reel table.

NOTE : When the reel table is removed and its height is adjusted with a washer, drop a drop of Sony oil on the reel shaft. (A drop of Sony oil is the amount that is scooped by a 2 mm dia. twig as shown in the figure.)

. Adjustment poly-slider washer:

3-645-567-11	6 mm dia.	0.05 mm thick
3-701-444-01	6 mm dia.	0.13 mm thick
3-701-444-11	6 mm dia.	0.25 mm thick
3-701-444-21	6 mm dia.	0.5 mm thick





5-2. T DRAWER ARM ADJUSTMENT

5-2-1. T Drawer Arm EJECT Position Adjustment

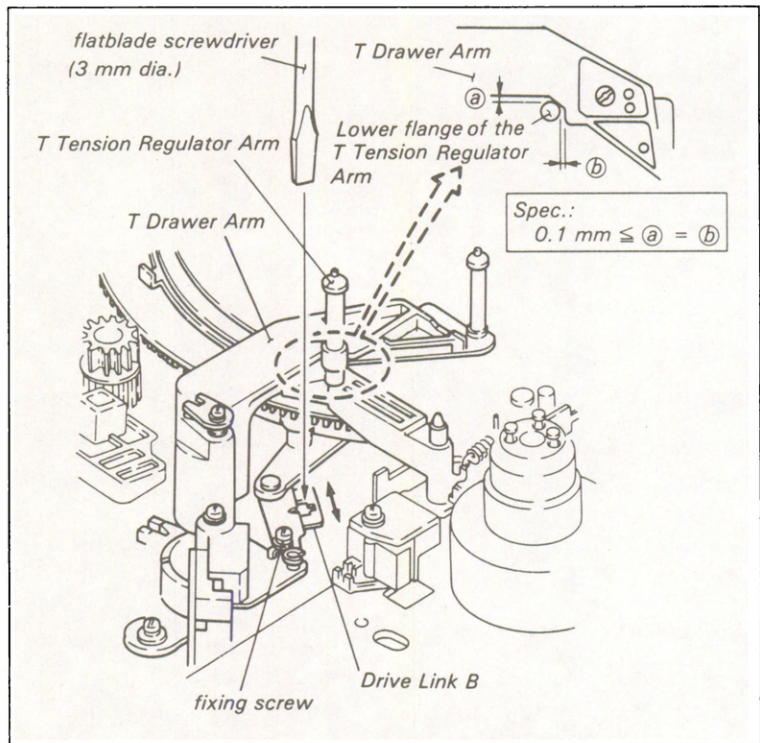
Mode: Put the unit into the FR-STOP mode without a cassette tape. And then put the unit into the EJECT completion mode.

Check procedure:

- (1) Check that the clearance between the lower flange of the T Tension Regulator Arm and the T Drawer Arm meets the required specification.

Adjustment procedure:

- (1) Adjust the position of the Drive Link (B) Ass'y with a flatblade screwdriver (3mm dia.) to meet the required specification.



5-2-2. Unthread-end Switch Position Adjustment

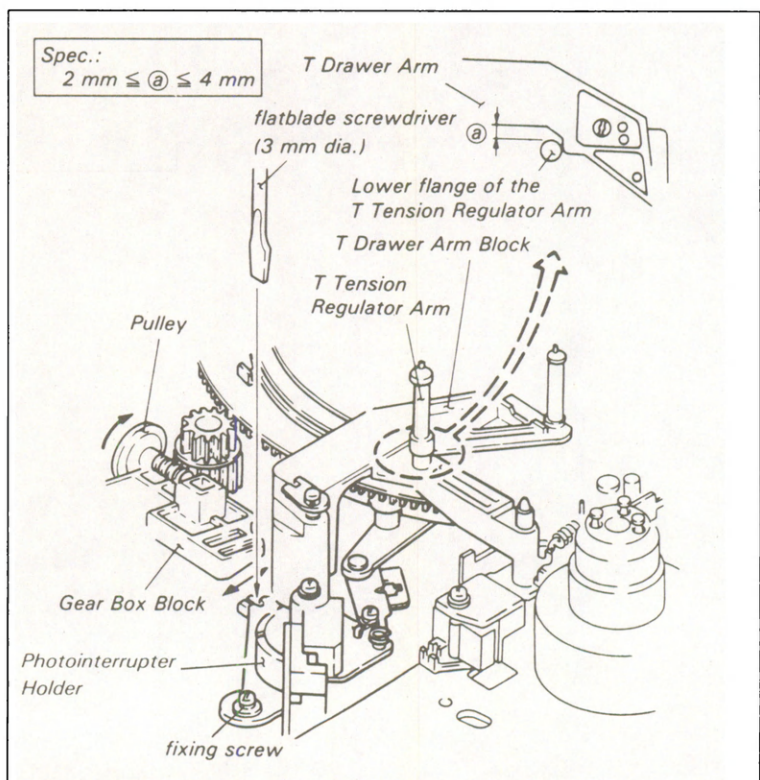
Tool: Black vinyl tape
(1 cm x 1.5 cm)

Preparation:

- (1) Put the unit into the FR-STOP mode and turn the power OFF.
- (2) Remove the Pinch Press Lever Spring from the bracket of the FR Detector Block with tweezers.
- (3) Remove the FR Detector Block and cover the D2 photointerrupter (FR-UNTHREAD END Detector) with the black vinyl tape. (The FR Detector is put into the FR-STOP mode.)

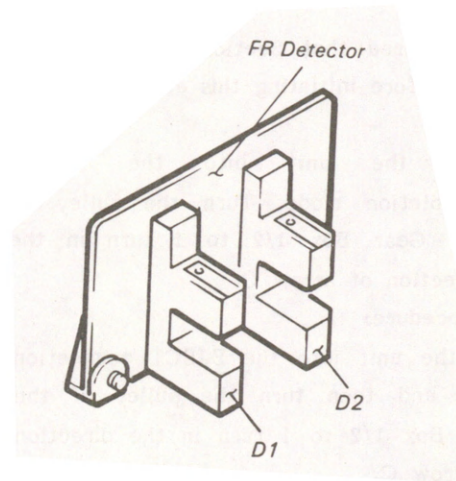
Check procedure:

- (1) Turn the power ON and rotate the pulley of Gear Box Block in the clockwise direction by hand.
- (2) When the relationship of the T Drawer Arm and the T Tension Regulator Arm is as shown in the figure, check that the T Solenoid clicks.



Adjustment procedure:

- (1) Adjust the position of the Photointerrupter Holder with a flatblade screwdriver (3mm dia.) to meet the required specification.
- (2) Turn the power OFF and install FR Detector Block after peeling off the black vinyl tape.
- (3) Perform Section 5-3-4, FR Detector Installing Position Adjustment.
- (4) Hook the Pinch Press Lever Spring to the bracket of the FR Detector Block with tweezers.



5-3. THREADING SYSTEM ADJUSTMENT

5-3-1. Threading Ring Rotation Adjustment

- . This adjustment is required only when the Threading Ring is replaced or removed.
- . If the Threading Ring is adjusted to have a narrower clearance, the ring rotation becomes sluggish. If adjusted to have a wider clearance, tape run during threading, FWD, and REV modes will be unstable.

Mode: Check mode: EJECT completion/
Threading/Unthreading
Adjustment mode: EJECT completion

Check procedure:

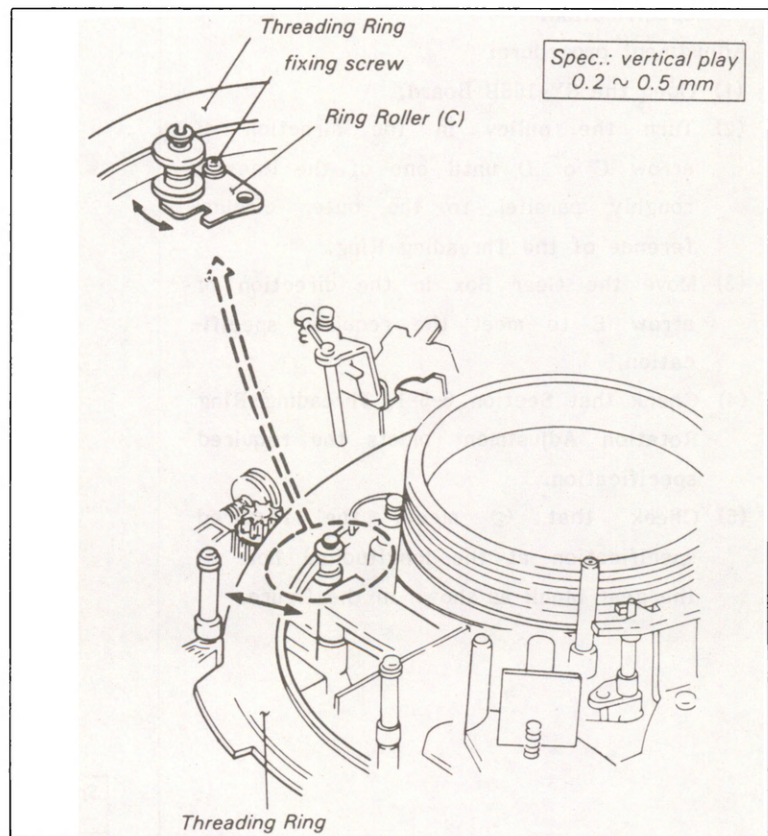
- (1) Put the unit into the EJECT completion mode. Check that the horizontal play meets the required specification when the Threading Ring is pushed in the direction of the arrow.
- (2) Check that the rotation of the Threading Ring during the Threading and Unthreading modes is smooth.

Adjustment procedure:

- (1) Put the unit into the EJECT completion mode.
- (2) Adjust the position of the Ring Roller (C) to meet the required specification.

Reference:

- . Insert a 0.3 mm thick piece of paper between the Threading Ring and the Ring Roller (C) as shown in the figure.
- . Three pages of this service manual are 0.3 mm thick.



5-3-2. Gear Box Installing Position Adjustment

- . It is required that Section 5-3-1, Threading Ring Rotation Adjustment is correct before initiating this adjustment.

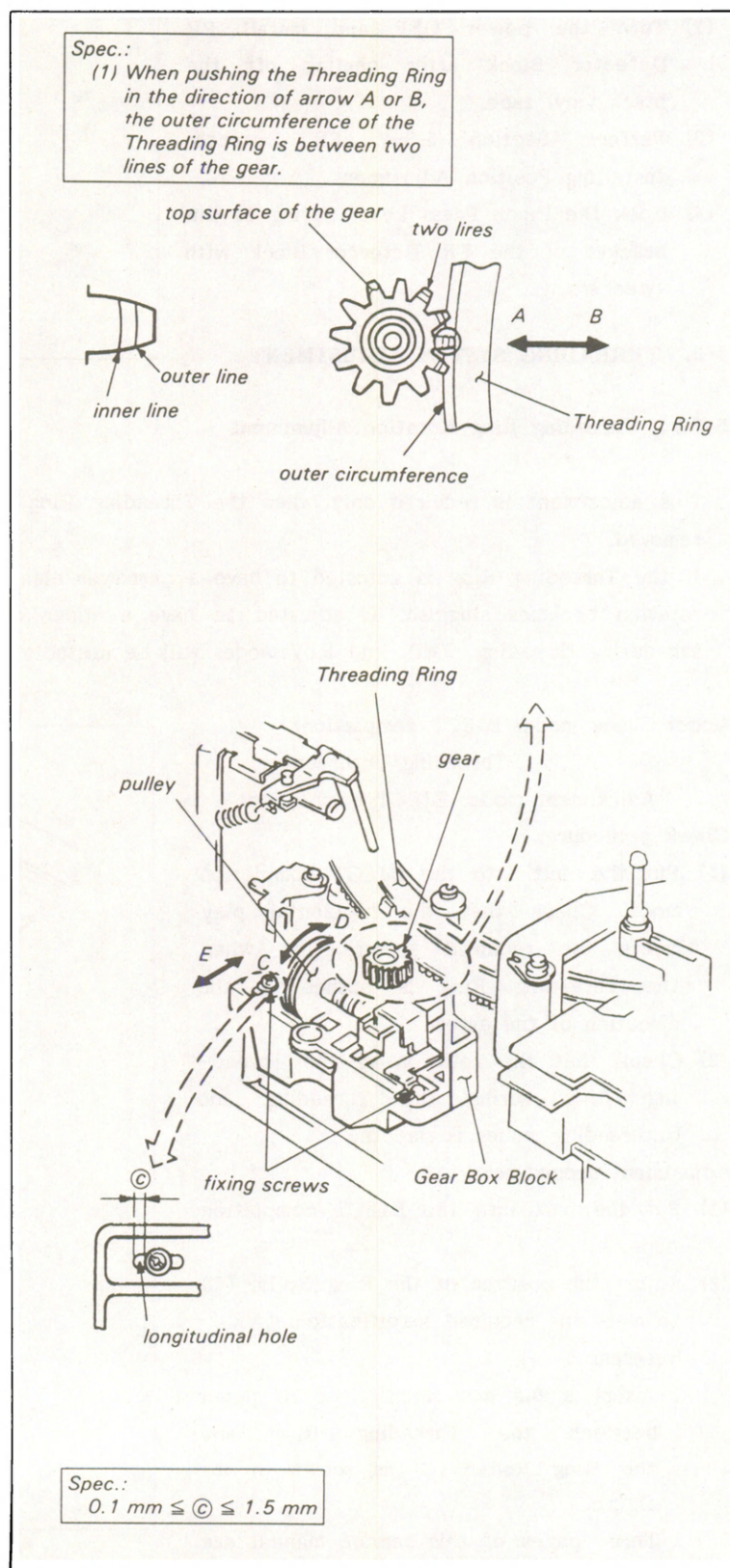
Mode: Put the unit into the EJECT completion mode. Turn the pulley of the Gear Box 1/2 to 1 turn in the direction of arrow C.

Check procedure:

- (1) Put the unit into the EJECT completion mode and then turn the pulley of the Gear Box 1/2 to 1 turn in the direction of arrow C.
- (2) Mark two lines on the top surface of the gear with a black felt tip pen. (Two lines are easy to see during the adjustment.)
- (3) Turn the pulley in the direction of arrow C or D until one of the lines is roughly parallel to the outer circumference of the Threading Ring.
- (4) Check that the relationship between the outer circumference of the Threading Ring and the Gear meets the required specification.

Adjustment procedure:

- (1) Open the SY-106B Board.
- (2) Turn the pulley in the direction of arrow C or D until one of the lines is roughly parallel to the outer circumference of the Threading Ring.
- (3) Move the Gear Box in the direction of arrow E to meet the required specification.
- (4) Check that Section 6-5-1, Threading Ring Rotation Adjustment meets the required specification.
- (5) Check that © meets the required specification at the longitudinal hole of the gear block as shown in the figure.



5-3-3. Pinch Roller Self Alignment Adjustment

. If this adjustment is incorrect, the position and the slantness of the Pinch Roller will not be correct when the Pinch Roller is pressed against the Capstan Shaft. Incorrect adjustment will cause a tape to be damaged.

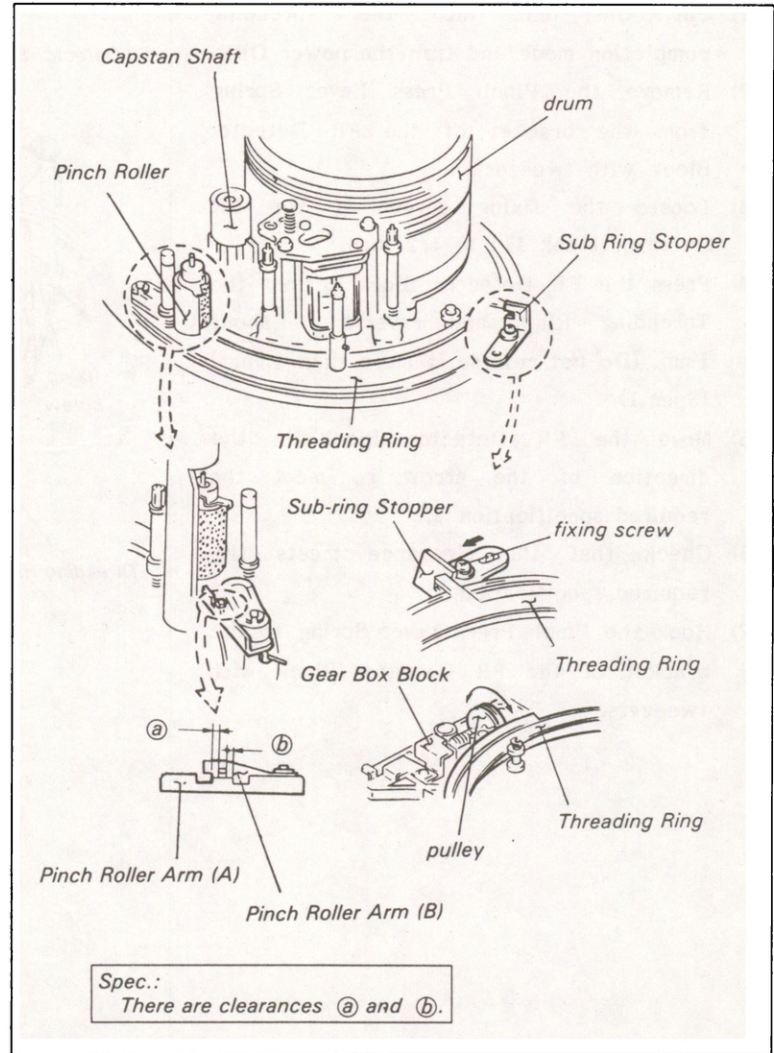
Mode: PLAY mode without a cassette tape

Check procedure:

- (1) Put the unit into the PLAY mode without a cassette tape.
- (2) Check that the relationship of Pinch Roller Arm (A) and Pinch Roller Arm (B) meets the required specification.

Adjustment procedure:

- (1) Put the unit into the PLAY mode without a cassette tape.
- (2) Loosen the fixing screw in the Sub-ring Stopper.
- (3) Turn the pulley of the Gear Box Block in the direction of the arrow to meet the required specification.
- (4) Push the Sub-ring Stopper gently in the direction of the arrow and tighten the fixing screw.
- (5) Put the unit into the EJECT completion mode and then perform the check procedure.



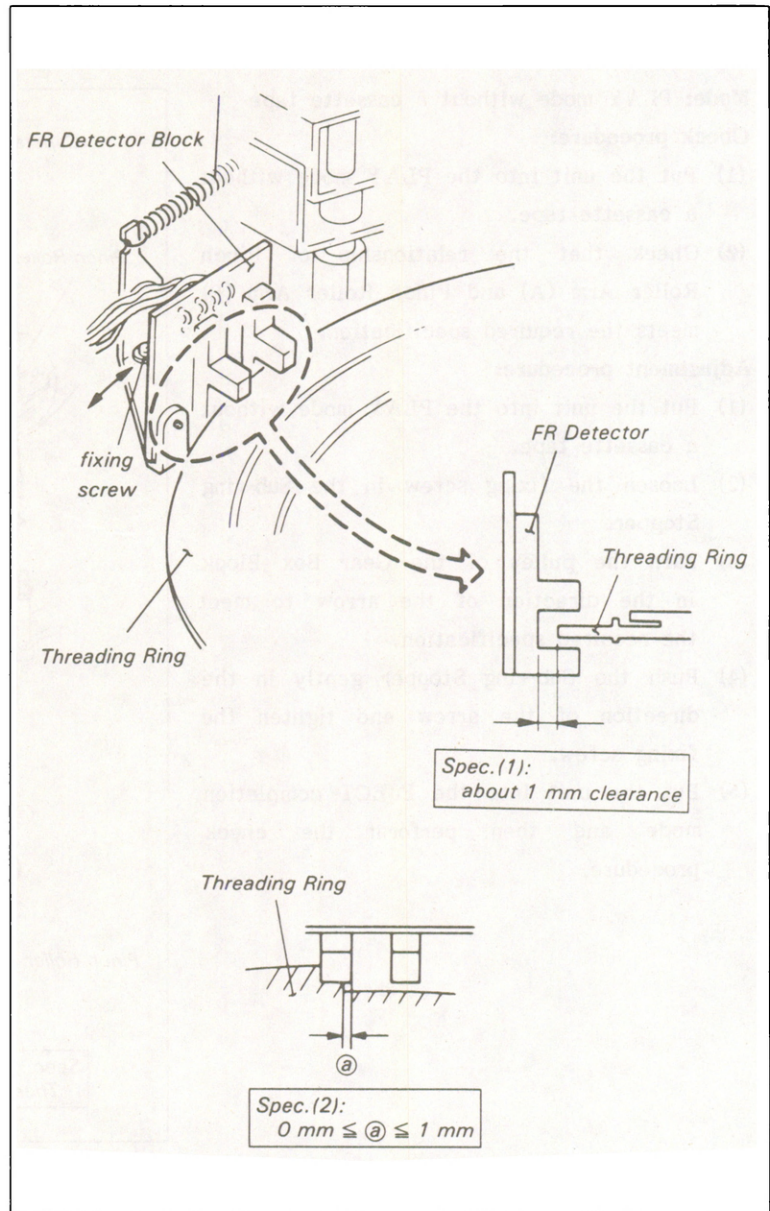
5-3-4. FR Detector Block Installing Position Adjustment

. It is required that the Section 5-3-1, Threading Ring Rotation Adjustment is correct before initiating this adjustment.

Mode: Threading completion mode

Adjustment procedure:

- (1) Put the unit into the Threading completion mode and turn the power OFF.
- (2) Remove the Pinch Press Lever Spring from the bracket of the FR Detector Block with tweezers.
- (3) Loosen the fixing screw of the FR Detector block 1/4 to 1/2 turn.
- (4) Press the FR Detector Block against the Threading Ring, and reverse it about 1mm. (Do not reverse it more than 1.5mm) (Spec.1)
- (5) Move the FR Detector Block in the direction of the arrow to meet the required specification 2.
- (6) Check that the clearance meets the required specification 1.
- (7) Hook the Pinch Press Lever Spring to the bracket of the FR Detector Block with tweezers.



5-4. PINCH LEVER BLOCK ADJUSTMENT

5-4-1. Pinch Lever Preset Adjustment

. It is required that Section 5-3-1, Threading Ring Rotation Adjustment and Section 6-3-3, Pinch Roller Self Alignment Adjustment are correct before initiating this adjustment.

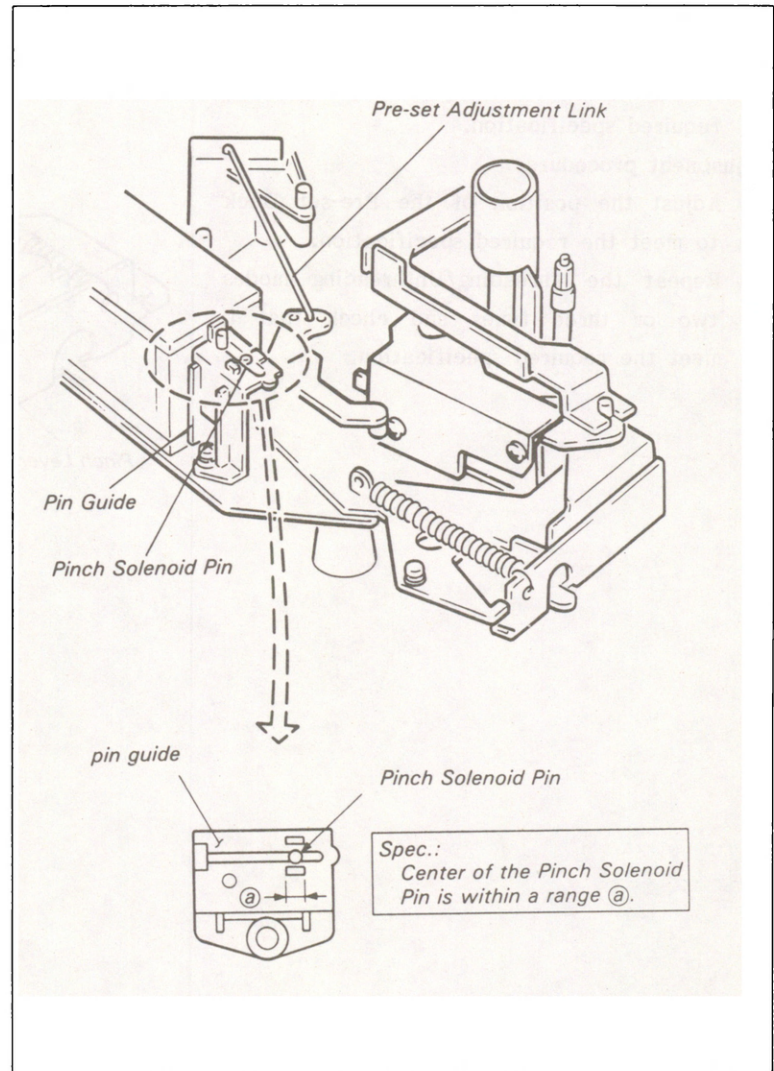
Mode: Turn the power OFF in the PLAY mode

Check procedure:

- (1) Put the unit into the PLAY mode and turn the power OFF. Check that the position of the Pinch Solenoid Pin meets the required specification.
- (2) Turn the power ON and press the PLAY button. After unthreading is complete, check as described in step (1).

Adjustment procedure:

- (1) Adjust the position of the Pinch Solenoid to meet the required specification, referring to Section 5-7-4, Pinch Solenoid Installing Position Adjustment.
- (2) If the specification in Step (1) cannot be obtained, adjust the position of the Sub-ring Stopper to meet the required specification, referring to Section 5-3-3, Pinch Roller Self Alignment Adjustment.
- (3) If the specification in Steps (1) and (2) cannot be obtained, insert the Pinch Lever Preset Adjustment Link into the appropriate hole of the Preset Lever Ass'y to meet the required specification. Perform Steps (1) and (2) again.



5-4-2. Pinch Roller Preset Adjustment

It is required that Section 5-3-1, Threading Ring Rotation Adjustment and Section 5-3-3, Pinch Roller Self Alignment Adjustment are correct before initiating this adjustment.

Tool: Thickness gauge

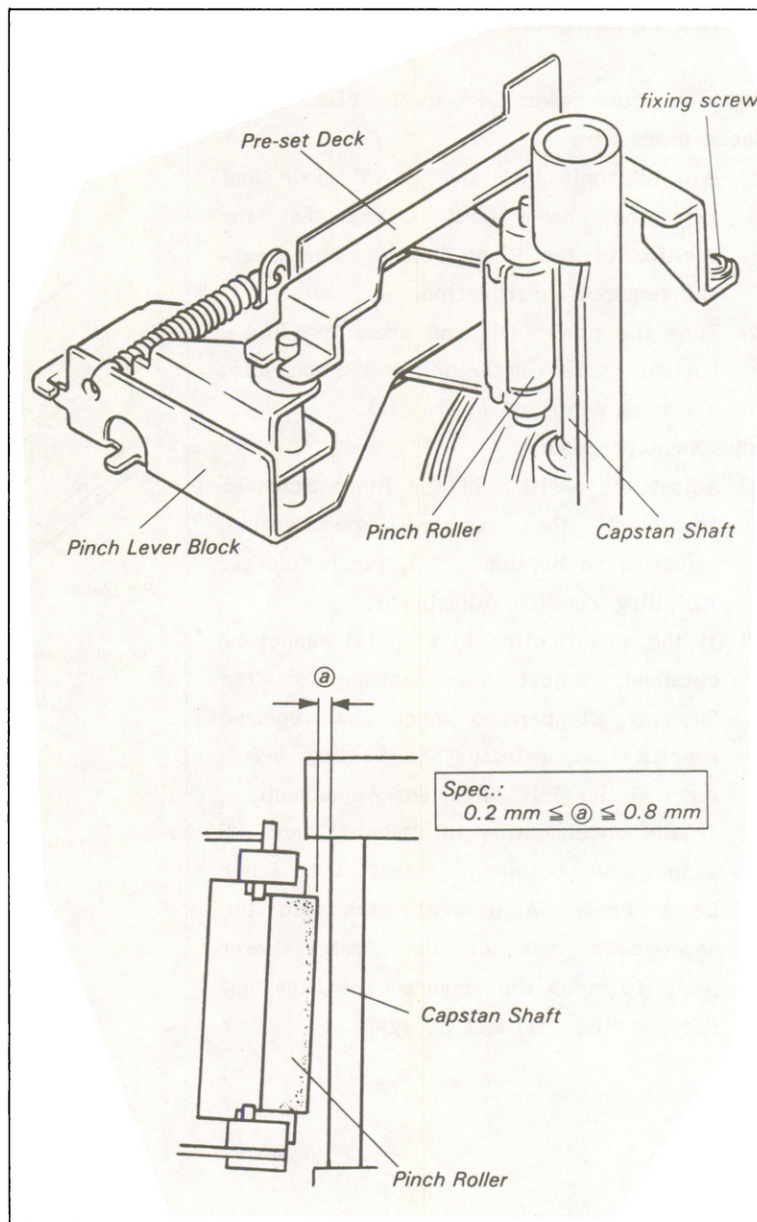
Mode: PLAY mode

Check procedure:

- (1) Check that the clearance between the Pinch Roller and Capstan Shaft meets the required specification.

Adjustment procedure:

- (1) Adjust the position of the Pre-set Deck to meet the required specification.
- (2) Repeat the Threading/Unthreading modes two or three times and check that it meet the required specification.



5-4-3. Pinch Solenoid Block Position Adjustment

Tool: Thickness gauge

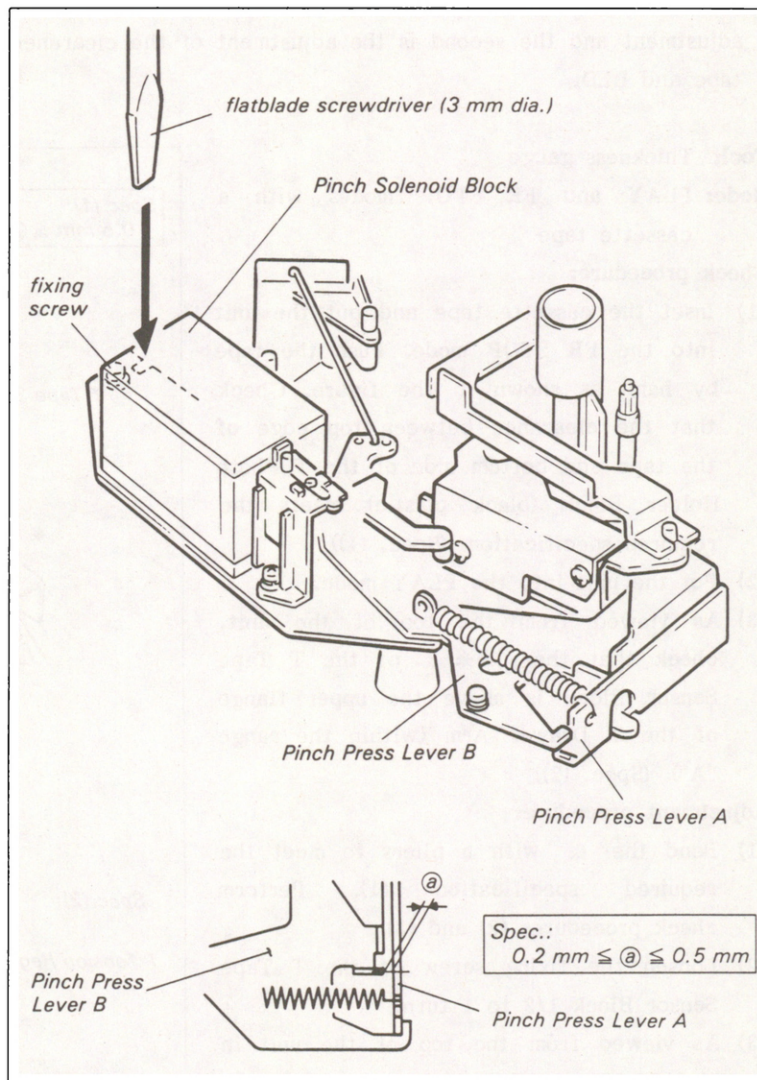
Mode: PLAY mode with a cassette tape

Check procedure:

- (1) Insert a cassette tape and put the unit into the PLAY mode.
- (2) Check that the clearance between Pinch Press Lever A and B meets the required specification.
- (3) Repeat the Unthreading/Threading modes two or three times and check as described in step (2).

Adjustment procedure:

- (1) Put the unit into the PLAY mode. Adjust the position of the Pinch Solenoid Block with a flatblade screwdriver (3 mm dia.) to meet the required specification.
- (2) Perform the check procedures (2) and (3).



5-5. T TAPE SENSOR POSITION ADJUSTMENT

. There are two adjustments in this section. The first is the height adjustment and the second is the adjustment of the clearance between the tape and LED.

Tool: Thickness gauge

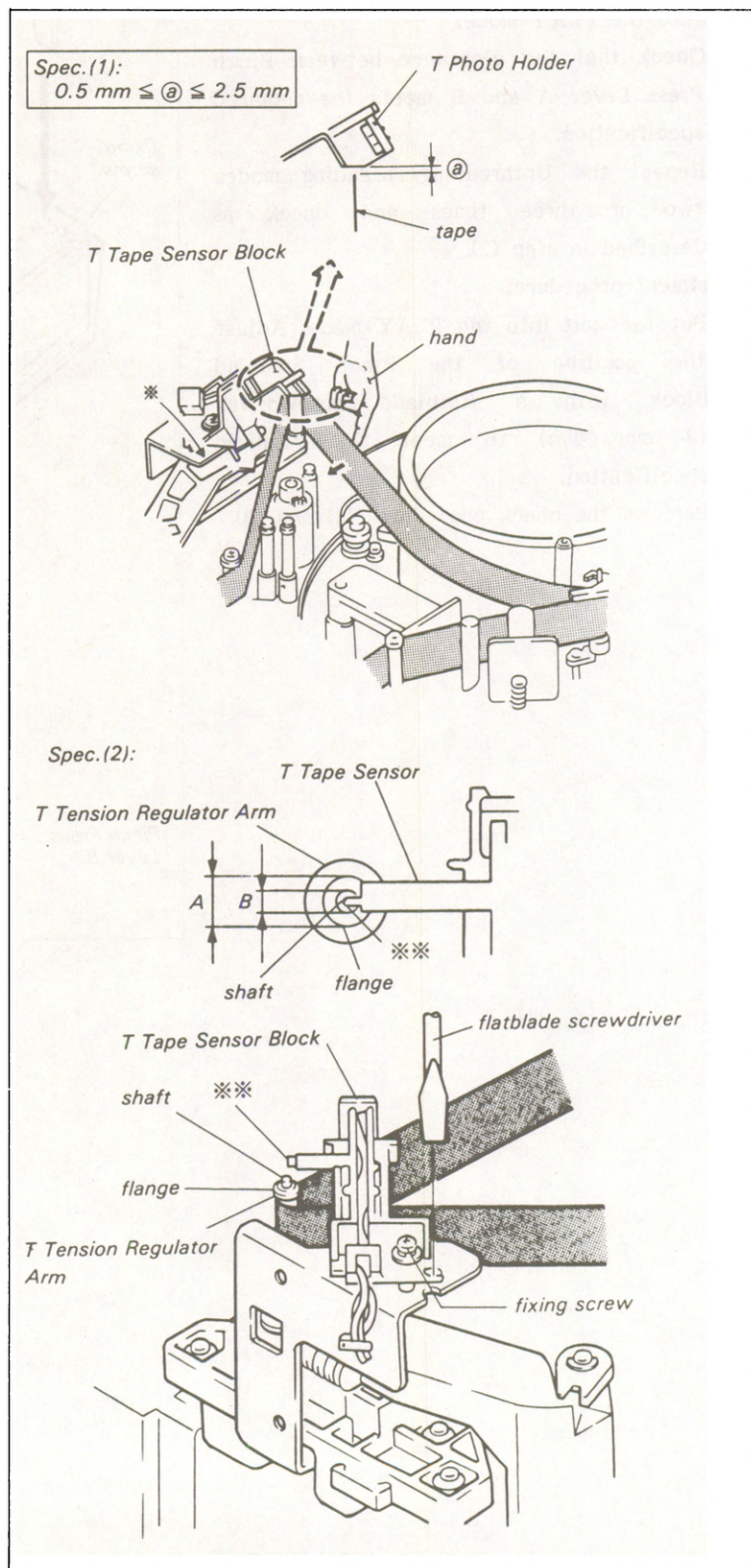
Mode: PLAY and FR STOP modes with a cassette tape

Check procedure:

- (1) Inset the cassette tape and put the unit into the FR STOP mode. Push the tape by hand as shown in the figure. Check that the clearance between top edge of the tape and bottom side of the T Photo Holder Block (black plastic) meets the required specification. (Spec. (1))
- (2) Put the unit into the PLAY mode.
- (3) As viewed from the top of the unit, check that the ※※ of the T Tape Sensor Block is above the upper flange of the T Drawer Arm (within the range "A"). (Spec. (2))

Adjustment procedure:

- (1) Bend the ※ with a pliers to meet the required specification (1). Perform check procedures (2) and (3).
- (2) Loosen the fixing screw of the T Tape Sensor Block 1/2 to 1 turn.
- (3) As viewed from the top of the unit in the PLAY mode, adjust the position of the T Tape Sensor Block with a flatblade screwdriver so that the ※※ of the T Tape Sensor Block is above the shaft of the T Drawer Arm (within the range "B").
- (4) Check that it meets the required specification (1).



5-6. TENSION ARM SYSTEM ADJUSTMENT

5-6-1. S Drawer Roller Block Limiter Adjustment

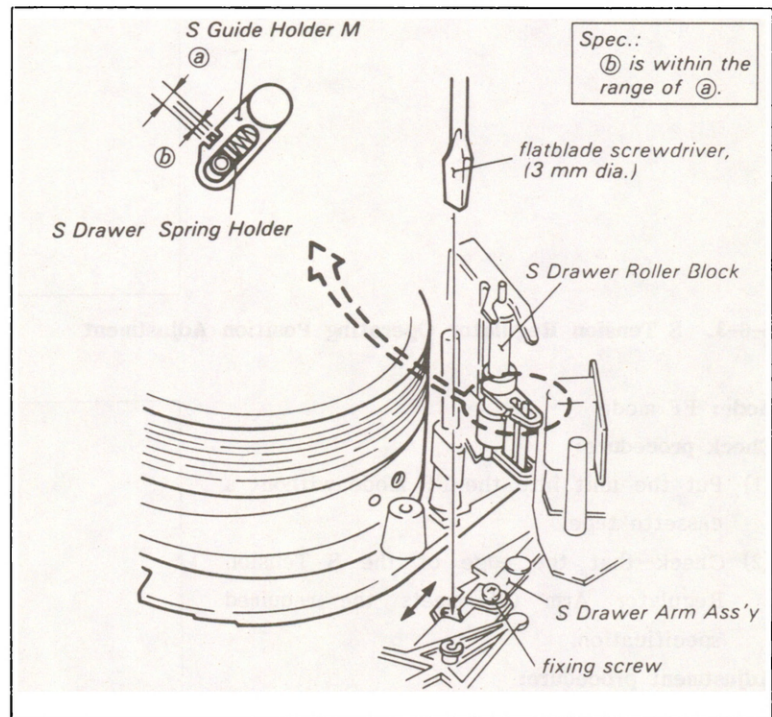
Mode: FR-STOP mode

Check procedure:

- (1) Check that " b " of the S Drawer Spring Holder in the S Drawer Roller Block fits into notch " a " of the S Guide Holder M.

Adjustment procedure:

- (1) Loosen the fixing screw of the S Drawer Arm Ass'y 1/4 to 1/2 turn.
- (2) Adjust the position of the S Drawer Arm Ass'y with a flatblade screwdriver (3 mm dia.) to meet the required specification.



5-6-2. T Tension Regulator Operating Position Adjustment

Mode: FR-STOP mode

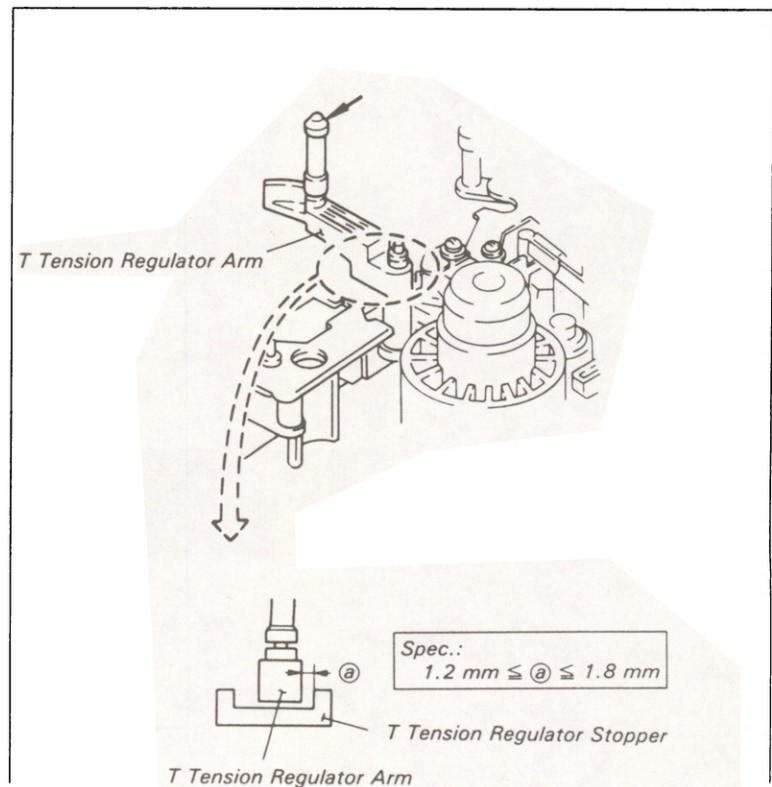
Tool: Thickness gauge

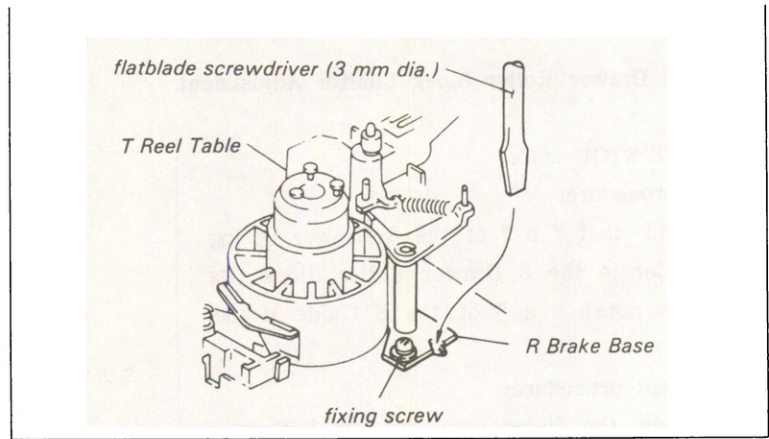
Check procedure:

- (1) Push the T Tension Regulator Arm in the direction of the arrow and remove the finger gently.
- (2) Check that the clearance between the T Tension Regulator Arm and the stopper meets the required specification.

Adjustment procedure:

- (1) Loosen the fixing screw of the R Brake Base 1/4 to 1/2 turn.
- (2) Adjust the position of the R Brake Base with a flatblade screwdriver (3 mm dia.) to meet the required specification.





5-6-3. S Tension Regulator Operating Position Adjustment

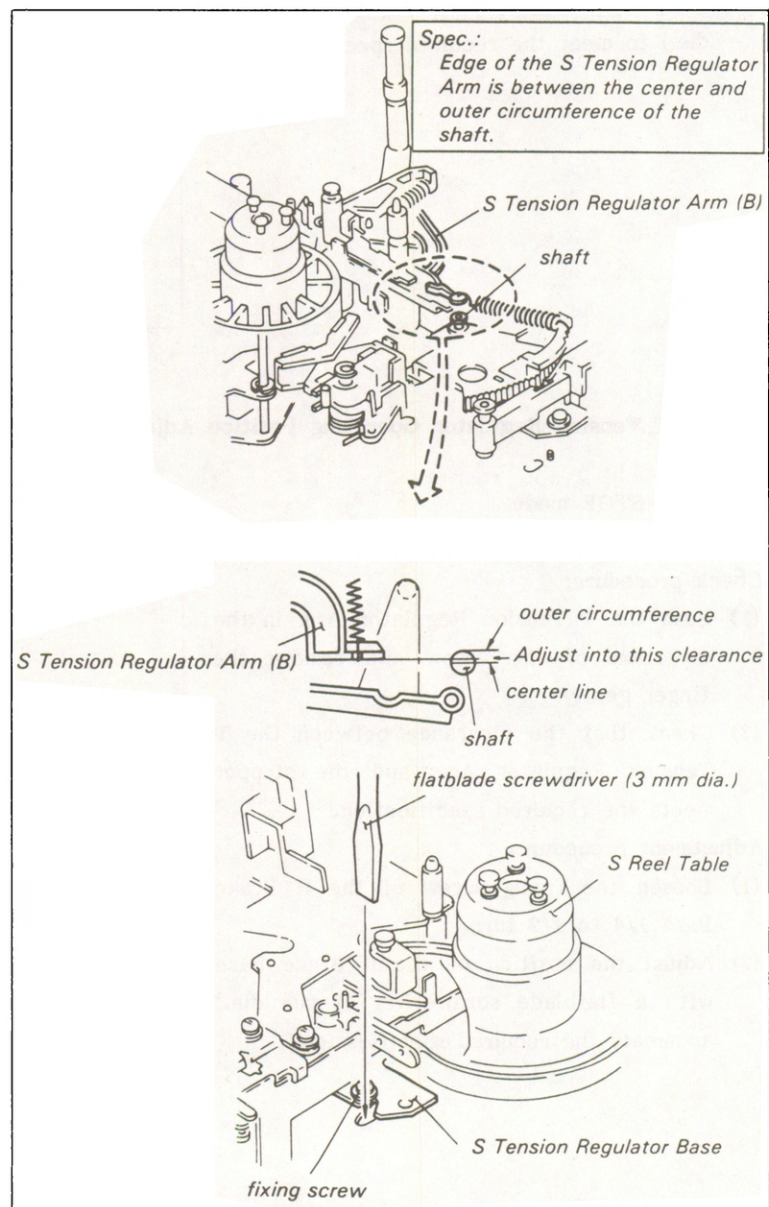
Mode: FF mode

Check procedure:

- (1) Put the unit into the FF mode without a cassette tape.
- (2) Check that the edge of the S Tension Regulator Arm (B) meets the required specification.

Adjustment procedure:

- (1) Loosen the fixing screw of the S Tension Regulator Base 1/4 to 1/2 turn.
- (2) Adjust the position of the S Tension Regulator Base to meet the required specification.



5-6-4. Tension Detector Position Adjustment

Tool: DC voltmeter

Mode: FWD / REV mode

Preparation:

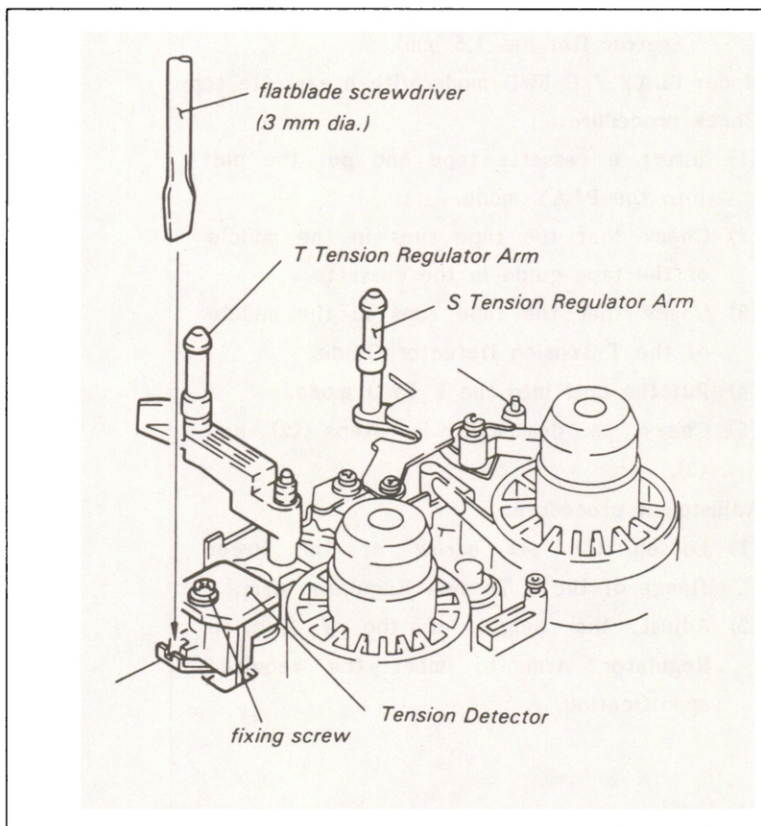
- (1) Connect the dc voltmeter to TP1 on the SY-106B Board.

Check procedure:

- (1) Put the unit into the FWD mode without a cassette tape.
- (2) Push the T Tension Regulator Arm to the right with a hand as far as it will go. Check that the dc voltage is more than 8V.
- (3) Push the T Tension Regulator Arm to the left with a hand as far as it will go. Check that the dc voltage is less than 2.5V.
- (4) Put the unit into the REV mode.
- (5) Push the S Tension Regulator to the right with a hand as far as it will go. Check that the dc voltage is less than 2.5 V.
- (6) Push the S Tension Regulator to the left with a hand as far as it will go. Check that the dc voltage is more than 8 V.

Adjustment procedure:

- (1) Remove the FR Detector Block from the unit.
- (2) Loosen the fixing screw of the Tension Detector 1/4 to 1/2 turn.
- (3) Insert a flatblade screwdriver (3 mm dia) in the notch and adjust the position of the Tension Detector to meet the required specification.
- (4) After adjustment, install the FR Detector.



5-6-5. T Tension Regulator Arm Height Adjustment

Tool: L-shaped hexagonal wrench
(across flat has 1.5 mm)

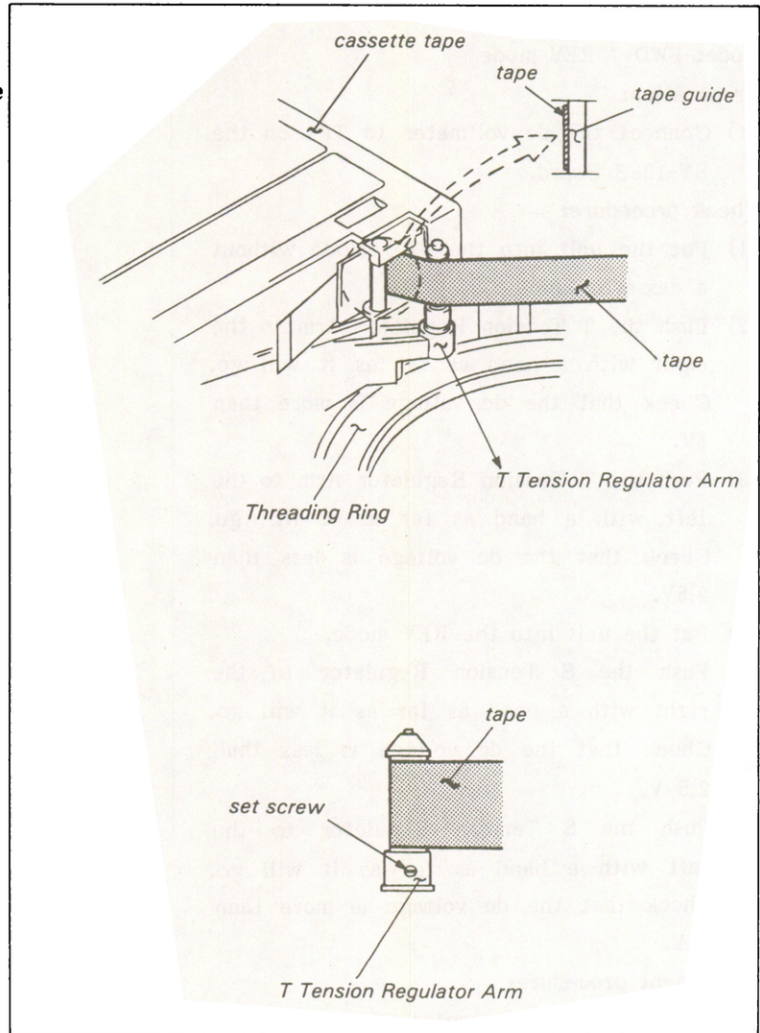
Mode: PLAY / F FWD mode with a cassette tape

Check procedure:

- (1) Insert a cassette tape and put the unit into the PLAY mode.
- (2) Check that the tape runs in the middle of the tape guide in the cassette.
- (3) Check that the tape runs in the middle of the T Tension Detector Guide.
- (4) Put the unit into the F FWD mode.
- (5) Check as described in steps (2) and (3).

Adjustment procedure:

- (1) Loosen the set screw at the lower flange of the T Tension Regulator Arm.
- (2) Adjust the height of the T Tension Regulator Arm to meet the required specification.



5-7. SEARCH SOLENOID SYSTEM ADJUSTMENT

5-7-1. Search Solenoid Installing Position Adjustment

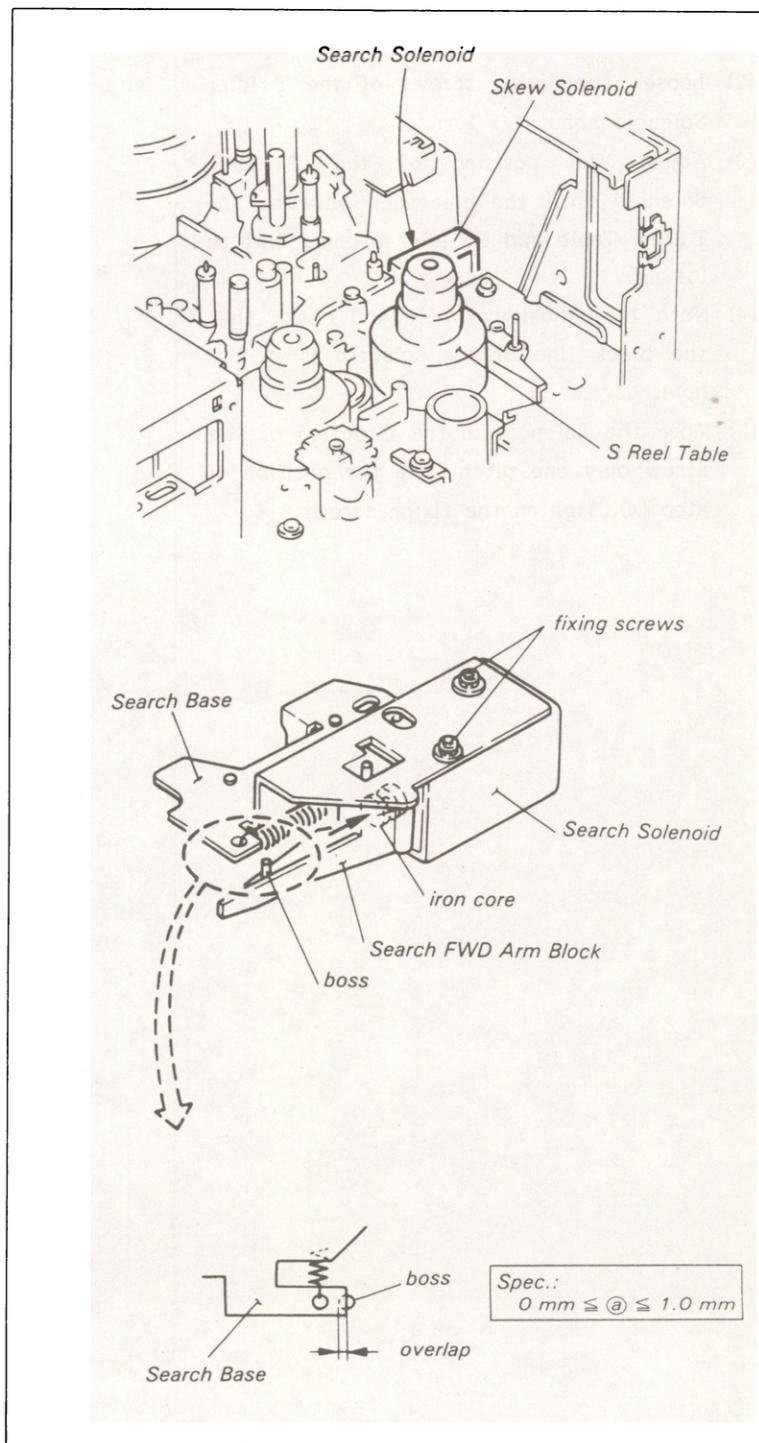
. This adjustment is required only when the search solenoid is replaced or removed.

Preparation:

- (1) Remove the Search Solenoid Block from the chassis.

Adjustment procedure:

- (1) Move the iron core into the fully energized position (as far as it will go in the direction of the arrow). Adjust the position of the Search Solenoid so that the overlap of the Search FWD Arm Boss and the Search Base meets the required specification.



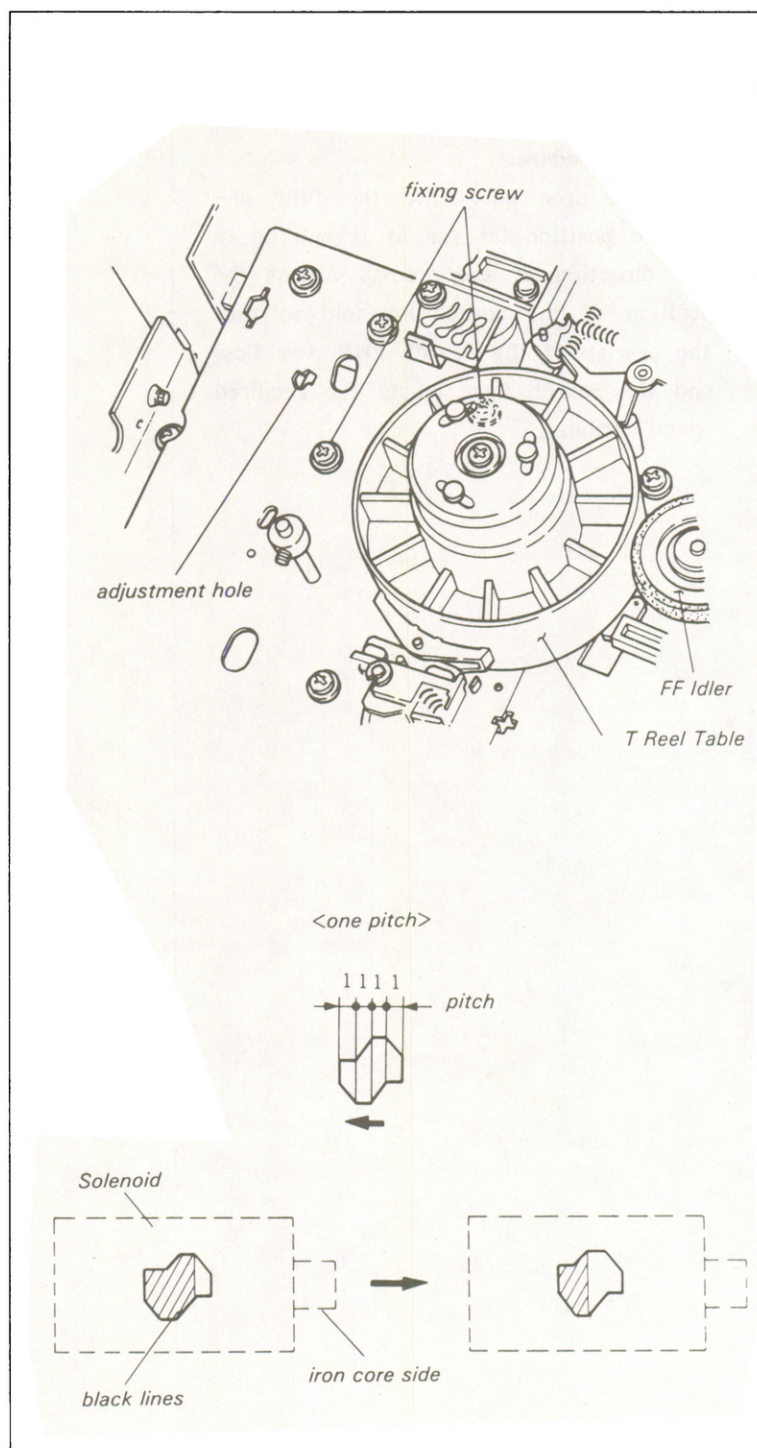
5-7-2. T Idler Solenoid Position Adjustment

. This adjustment is performed when T Idler Solenoid is replaced or removed, and the F FWD Torque does not meet the required specification.

Mode: F FWD mode without a cassette tape

Adjustment procedure:

- (1) Put the unit into the F FWD mode without a cassette tape.
- (2) Loosen the fixing screws of the T Idler Solenoid about 1/2 turn.
- (3) Adjust the position of the T Idler Solenoid until the clearance between the T Reel Table and FF Idler become 0.01 to 0.1 mm.
- (4) Note the adjustment hole and check that the black line of the solenoid is in this hole.
- (5) Move the Solenoid in the direction of the arrow only one pitch from the position of step (4). Tighten the fixing screws.



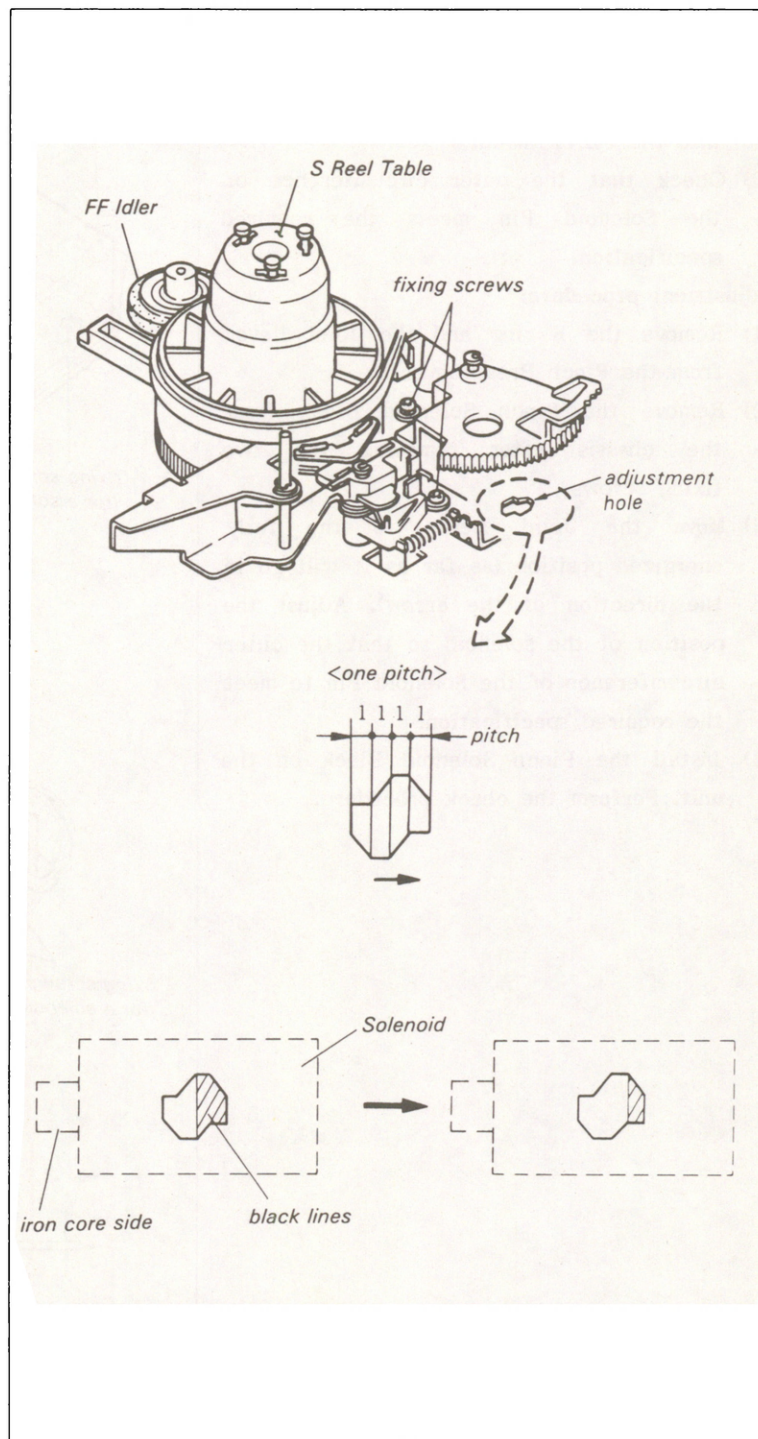
5-7-3. S Idler Solenoid Position Adjustment

. This adjustment is required only when the S Idler Solenoid is replaced or removed, and the REW Torque does not meet the required specification.

Mode: REW mode without a cassette tape

Adjustment procedure:

- (1) Put the unit into the REW mode without a cassette tape.
- (2) Loosen the fixing screws of the S Idler Solenoid about 1/2 turn.
- (3) Adjust the position of the S Idler Solenoid until the clearance between the S Reel Table and FF Idler become 0.01 to 0.1 mm.
- (4) Note the adjustment hole and check that the black line of the solenoid is in this hole.
- (5) Move the Solenoid in the direction of the arrow only one pitch from the position of step (4). Tighten the fixing screws.



5-7-4. Pinch Solenoid Installing Position Adjustment

. This adjustment is required only when the Pinch Solenoid is replaced or removed.

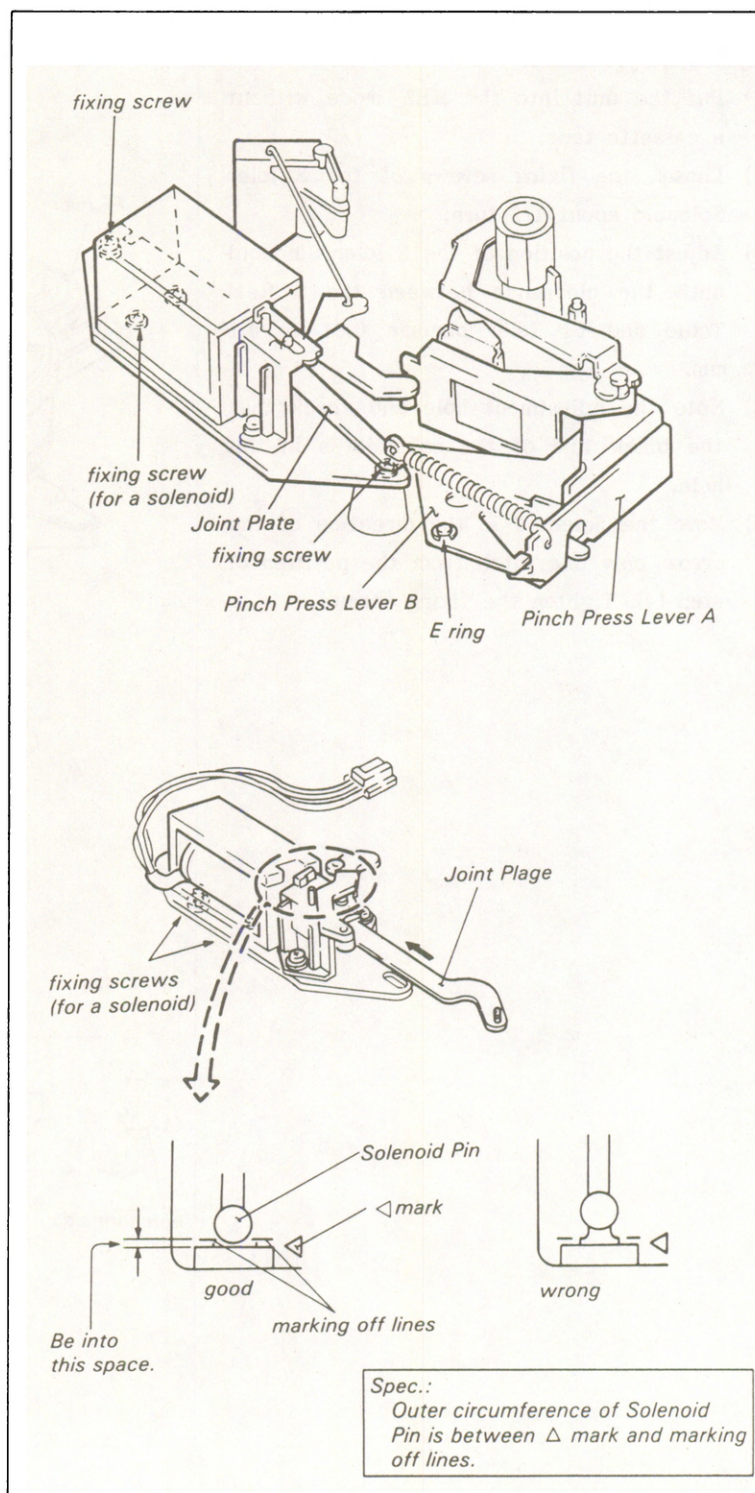
Mode: PLAY mode with a cassette tape

Check procedure:

- (1) Insert a cassette tape and put the unit into the PLAY mode.
- (2) Check that the outer circumference of the Solenoid Pin meets the required specification.

Adjustment procedure:

- (1) Remove the E ring and the Joint Lever from the Pinch Press Lever B.
- (2) Remove the Pinch Solenoid Block from the chassis after removing the two fixing screws.
- (3) Move the Joint Lever to the fully energized position (as far as it will go in the direction of the arrow). Adjust the position of the solenoid so that the outer circumference of the Solenoid Pin to meet the required specification.
- (4) Install the Pinch Solenoid Block on the unit. Perform the check procedure.



5-7-5. T Brake Solenoid Position Adjustment

Tool: Eccentric screwdriver (6 φ)

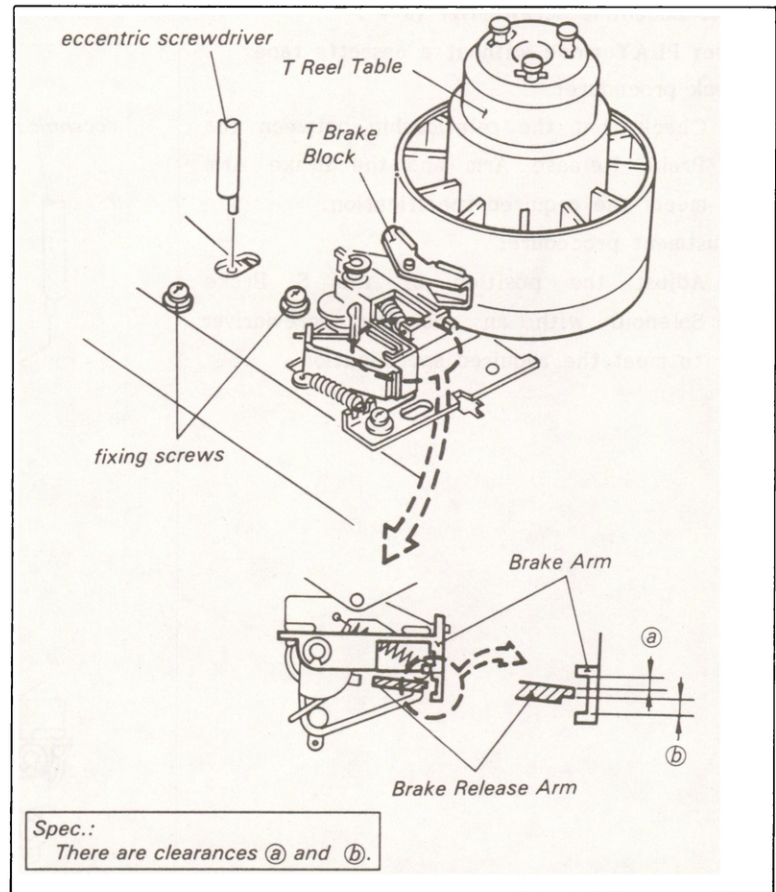
Mode: PLAY mode without a cassette tape

Check procedure:

- (1) Check that the relationship between the Brake Release Arm and the Brake Arm meets the required specification.

Adjustment procedure:

- (1) Adjust the position of the T Brake Solenoid with an eccentric screwdriver to meet the required specification.



5-7-6. S Brake Solenoid Position Adjustment

Tool: Eccentric screwdriver (6 φ)

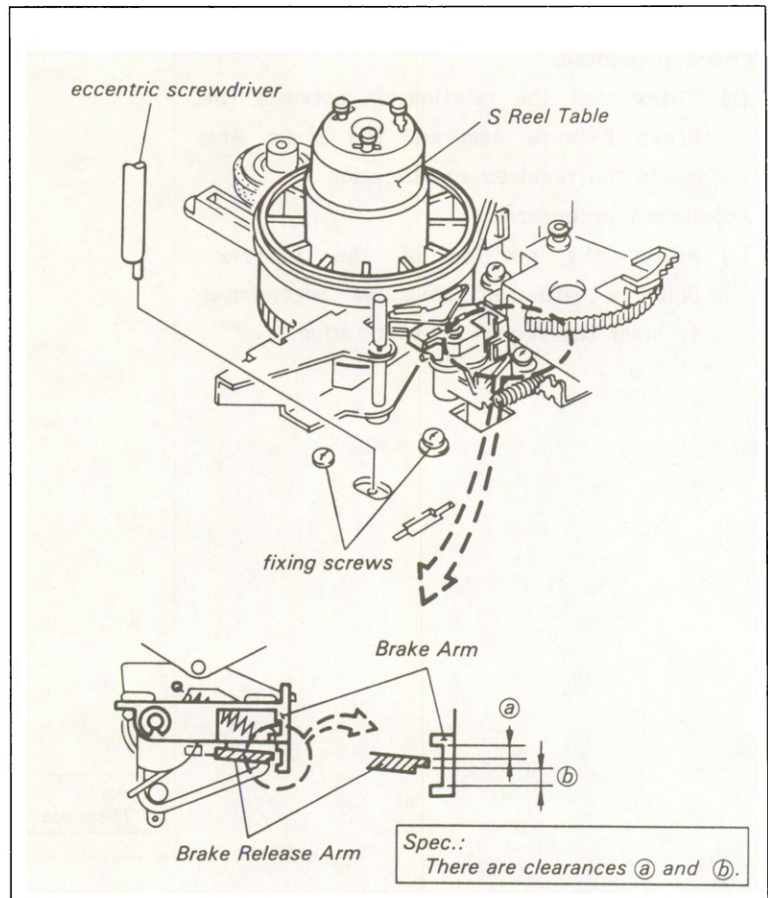
Mode: PLAY mode without a cassette tape

Check procedure:

- (1) Check that the relationship between the Brake Release Arm and the Brake Arm meets the required specification.

Adjustment procedure:

- (1) Adjust the position of the S Brake Solenoid with an eccentric screwdriver to meet the required specification.



5-8. CASSETTE-UP COMPARTMENT ADJUSTMENT

- . The Cassette-up Compartment has two photo-electric switches. The ON/OFF timing of these switches is adjusted in this procedures.
- . Remove the Cassette-up Compartment from the unit for this adjustment.

5-8-1. Cassette-in Switch Position Adjustment

Tool: Circuit tester

Thickness gauge

Preparation:

- (1) Connect jumpers from the harness plug for the Cassette-up Compartment to terminals on the CC-31 Board as follows:

plug of harness (CN1)	terminal on CC-31 Board
pin 4 (5V) ←	→ pin 4/CN401
pin 5 or 2 (GND) ←	→ pin 5 or 2/CN401

- (2) Turn the power ON.

Check procedure:

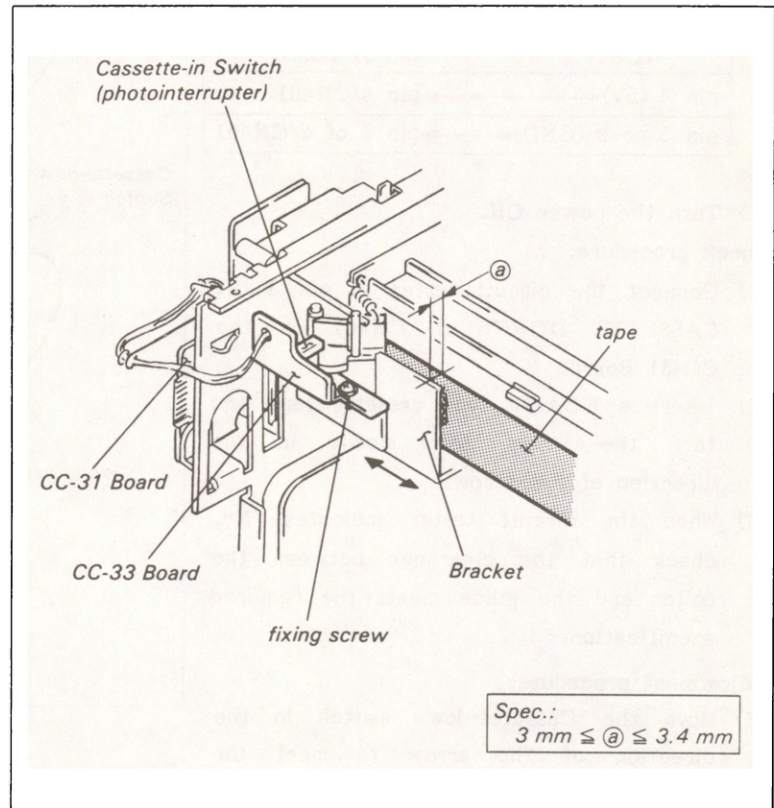
- (1) Connect the circuit tester to pin 1 (H; CASSETTE IN) of CN401 on the CC-31 Board.
- (2) Slowly insert a KCA-60 type cassette tape.
- (3) When the circuit tester indicates "H" (about 5V), check that the clearance between the front side of the cassette tape and the bracket of the Cassette-up Compartment meets the required specification.

Adjustment procedure:

- (1) Move the Cassette-in Switch in the direction of the arrow to meet the required specification.

Reference:

Insert a 3.3 mm thickness gauge between the cassette tape and the bracket. Adjust the position of the Cassette-in Switch until the circuit tester indicates to "H".



5-8-2. Cassette-down Switch Position Adjustment

Tool: Circuit tester

Preparation:

- (1) Connect jumpers from the harness plug of the Cassette-up Compartment to terminal on the CC-31 Board as follows:

plug of harness (CN1)	terminal on CC-31 Board
pin 4 (5V) ←	→ pin 4/CN401
pin 5 or 2 (GND) ←	→ pin 5 of 2/CN401

- (2) Turn the power ON.

Check procedure:

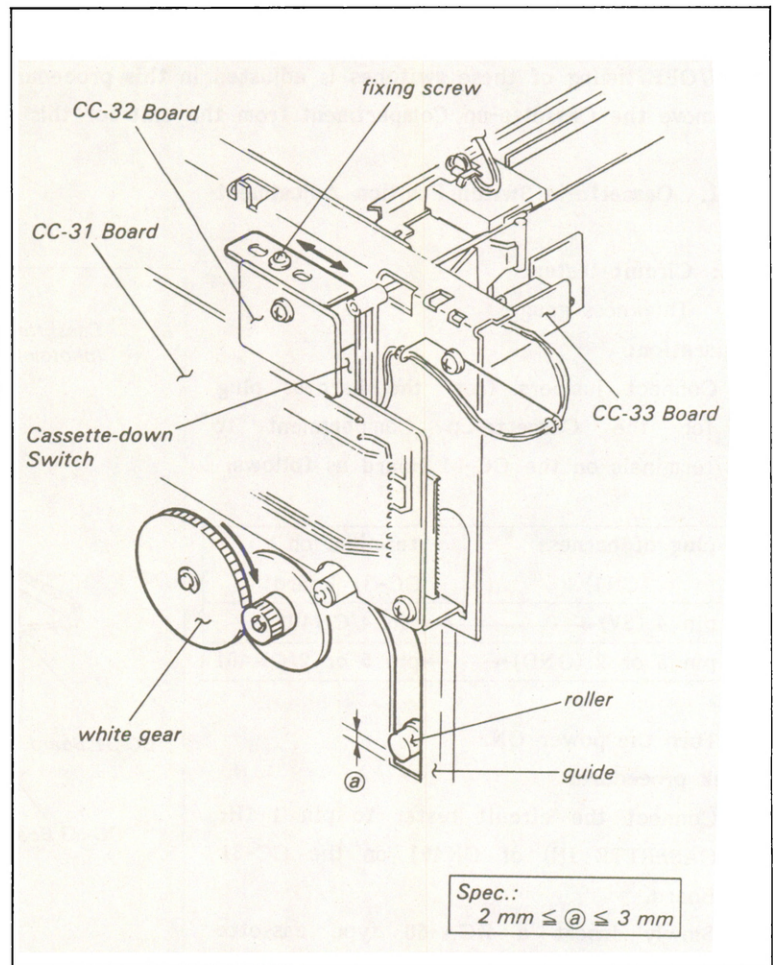
- (1) Connect the circuit tester to pin 3 (H; CASSETTE DOWN) of CN401 on the CC-31 Board.
- (2) Insert a KCA-60 type cassette tape and turn the white gear slowly in the direction of the arrow.
- (3) When the circuit tester indicates "H", check that the clearance between the roller and the guide meets the required specification.

Adjustment procedure:

- (1) Move the Cassette-down switch in the direction of the arrow to meet the required specification.

Reference:

Turn the white gear on the right side until the clearance between the roller and the guide is 2.2 mm. Adjust the position of the Cassette-down Switch so that the circuit tester indicates "H" in this position.



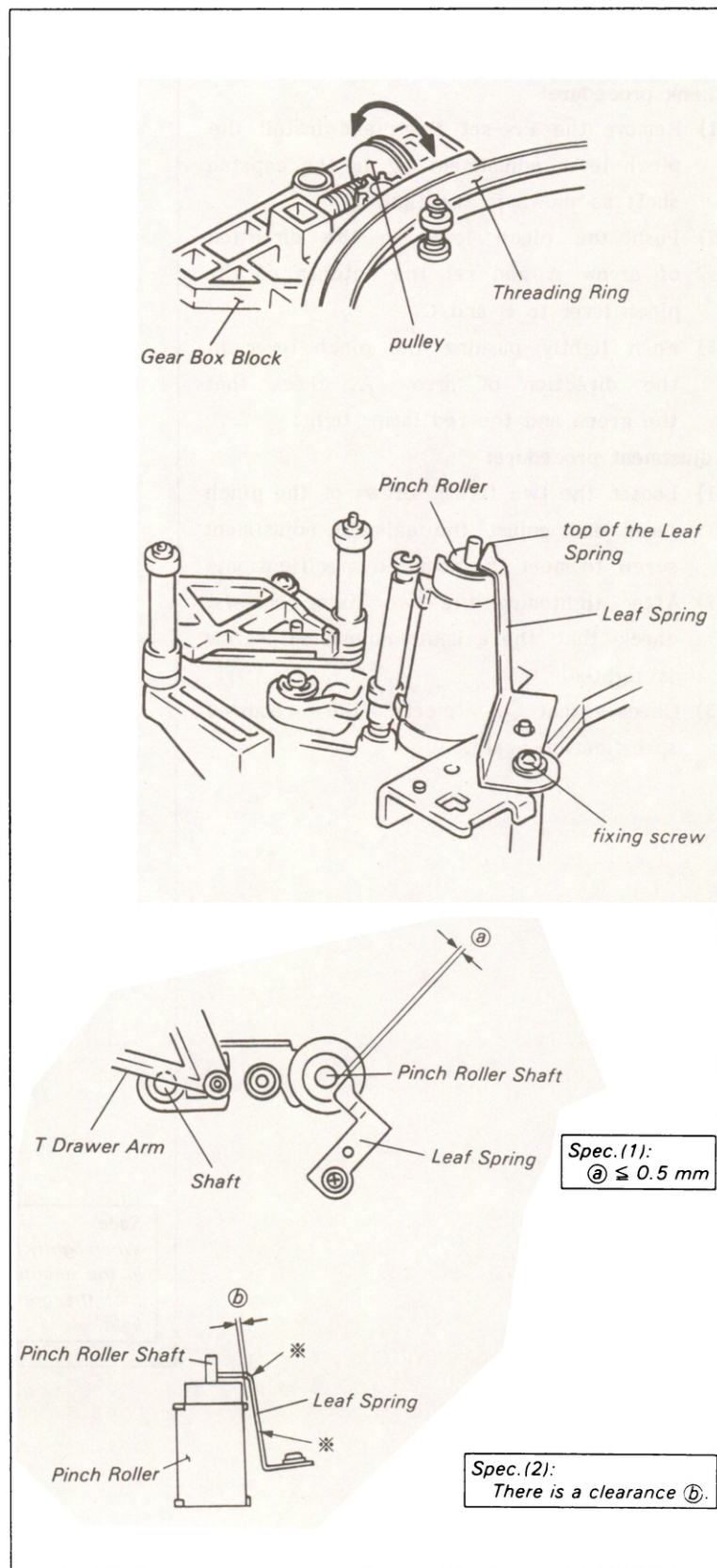
5-9. LEAF SPRING POSITION ADJUSTMENT

Check procedure:

- (1) Put the unit into the PLAY mode without a cassette tape and then put the unit into the EJECT mode.
- (2) Turn the Gear Box Pulley by hand so that the edge of the T Drawer Arm is at the center of the shaft as shown in the figure.
- (3) Check that the clearance between the Leaf Spring and the Pinch Roller Shaft meets the required specification (1).
- (4) Put the unit into the PLAY mode without a cassette tape and then put the unit into the EJECT completion mode.
- (5) Check that the Leaf Spring touches the Pinch Roller Shaft, and the clearance between the Leaf Spring and the Pinch Roller meets the required specification (2).

Adjustment procedure:

- (1) Adjust the position of the Leaf Spring to meet the required specifications (1) and (2). If only specification (2) cannot be obtained, bend the ※ of the Leaf Spring to meet the required specification.



5-10. Pinch Lever Azimuth Adjustment

Tool: Pinch lever adjustment jig

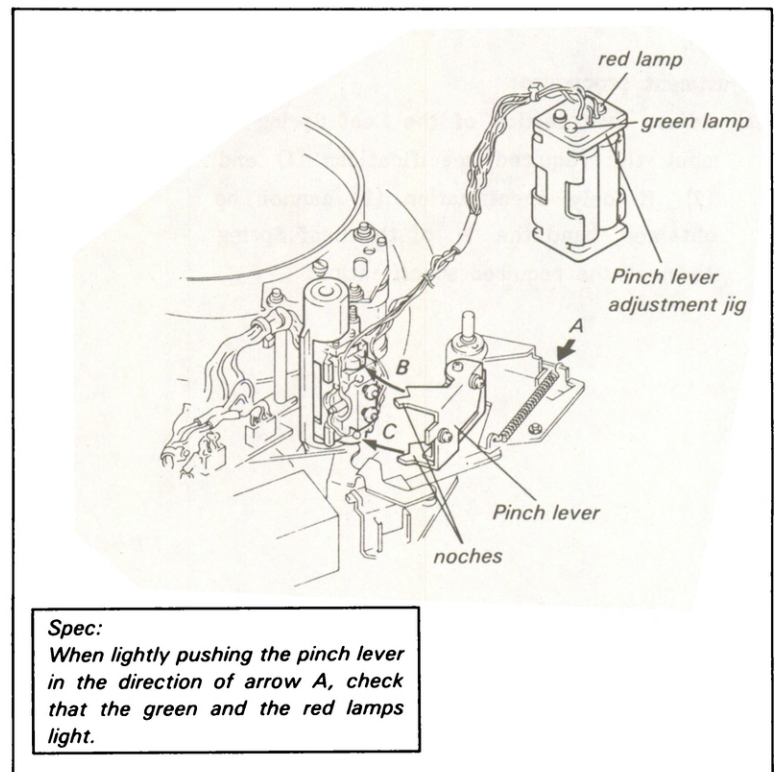
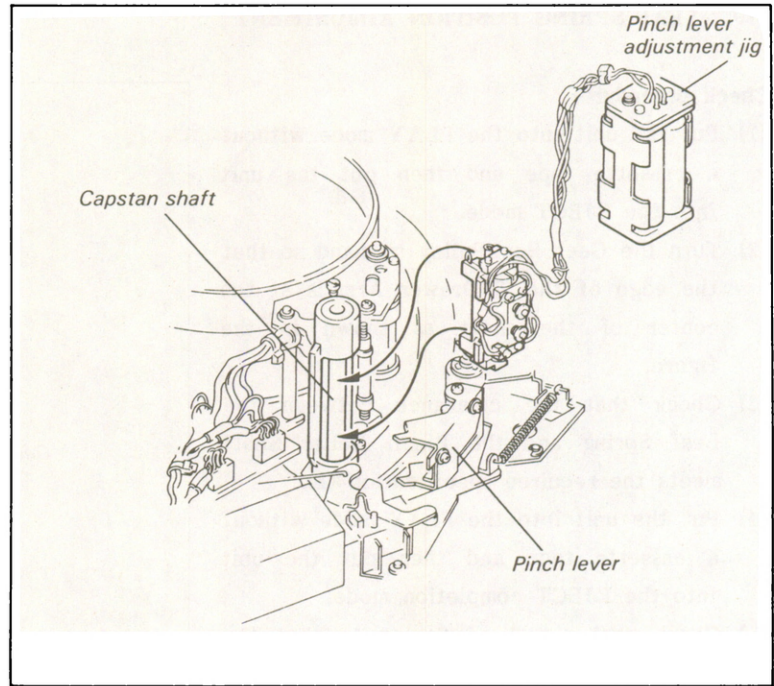
Mode: EJECT completion mode

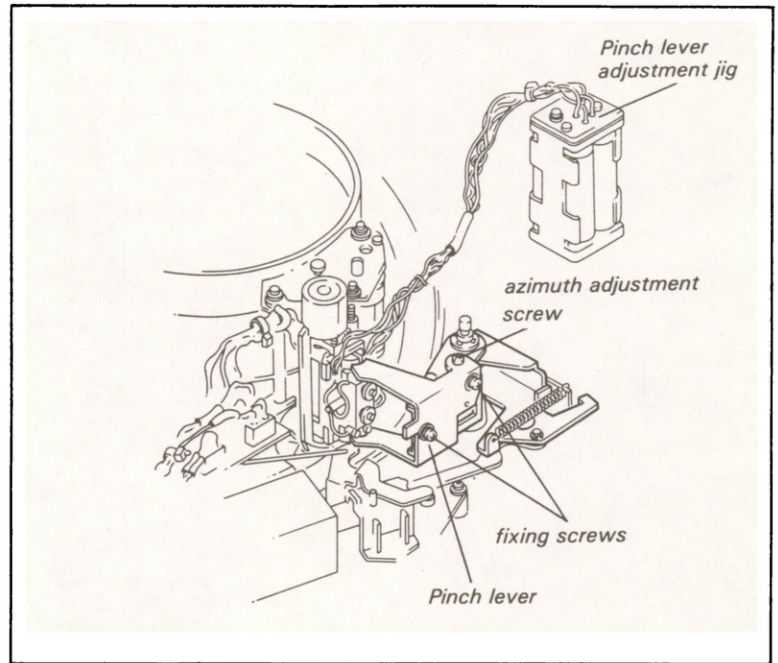
Check procedure:

- (1) Remove the Pre-set Deck and install the pinch lever adjustment jig to the capstan shaft as shown in the figure.
- (2) Push the pinch lever in the direction of arrow A and set the notches of the pinch lever to B and C.
- (3) When lightly pushing the pinch lever in the direction of arrow A, check that the green and the red lamps light.

Adjustment procedure:

- (1) Loosen the two fixing screws of the pinch lever and adjust the azimuth adjustment screw to meet the required specification.
- (2) After tightening the two fixing screws, check that the azimuth adjustment screw is tighten.
- (3) Check that it meets the required specification again.





SECTION 6

BACK TENSION AND TORQUE ALIGNMENT

6-1. BRAKE SYSTEM ADJUSTMENT

6-1-1. S Brake Torque Adjustment

Tool: Reel table torque measurement tape
(100 mm dia.)

Tension scale (200 g full scale)

Mode: EJECT completion / power OFF mode

Check procedure:

- (1) Grasp the top of the S Reel Table. While turning it in the clockwise direction approx. 30 degrees, check that the clearance between the Brake Arm and the Lining Holder meets the required specification (1).
- (2) Place the jig tape on the S Reel Table and hook a tension scale to the end of the jig tape. Pull out the tape at a constant speed of approx. 9.5cm/sec. in the direction of the arrow. Check that the scale reading meets the required specification (2).

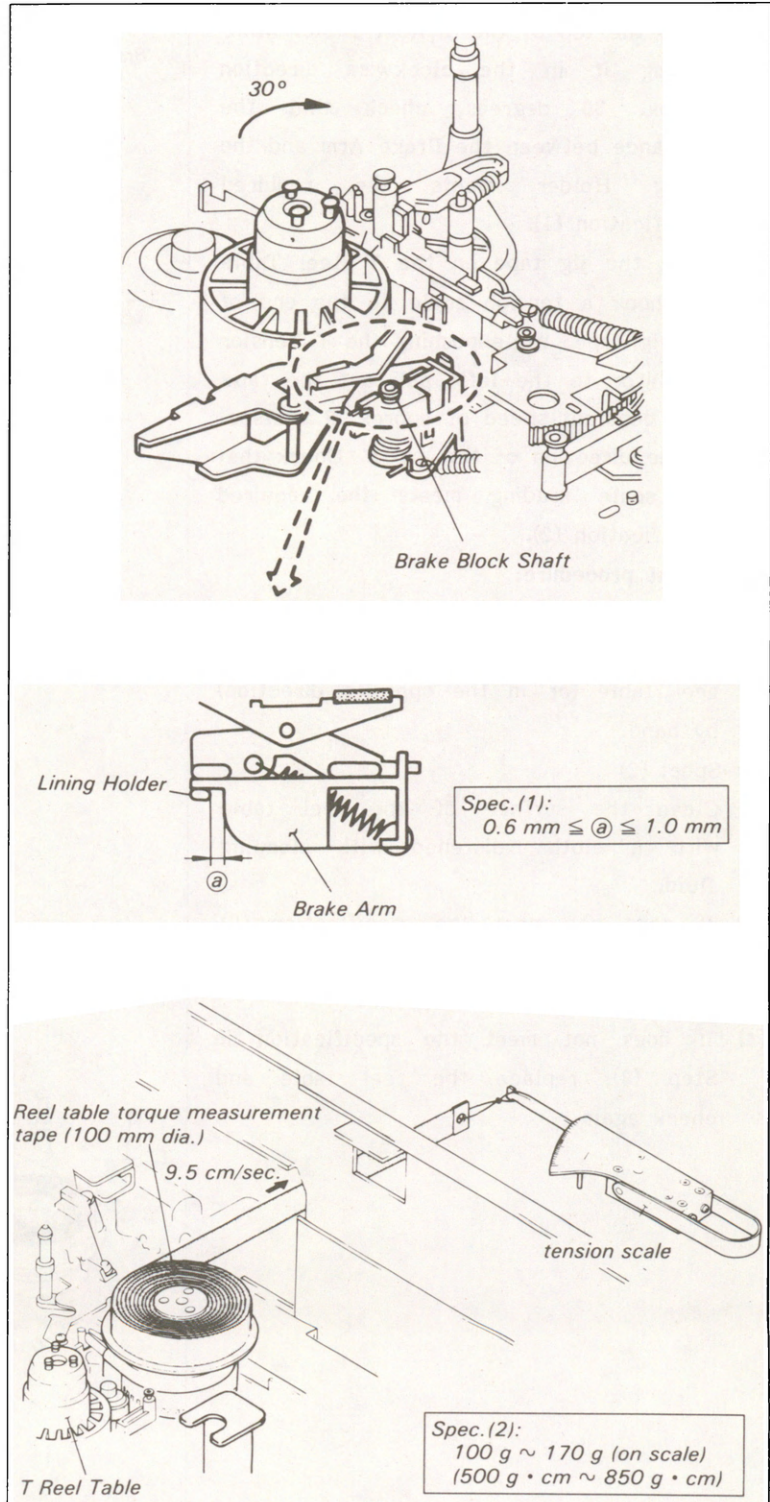
Adjustment procedure:

For Spec. (1)

- (1) Bend the Brake Block Shaft toward the reel table (or in the opposite direction) by hand.

For Spec. (2)

- (2) Clean the surface of the reel table with a cloth moistened with cleaning fluid.
- (3) If does not meet the specification (2), replace the Lining Holder and check again.
- (4) If does not meet the specification in Step (3), replace the reel table and check again.



6-1-2. T Brake Torque Adjustment

Tool: Reel table torque measurement tape
(100 mm dia.)

Tension scale (200 g full scale)

Mode: EJECT completion / power OFF mode

Check procedure:

- (1) Grasp the top of the T Reel Table. While turning it in the clockwise direction approx. 30 degrees, check that the clearance between the Brake Arm and the Lining Holder meets the required specification (1).
- (2) Place the jig tape on the T Reel Table and hook a tension scale to the end of the jig tape. While pushing the T Tension Regulator to the left, pull out the tape at a constant speed of approx. 9.5cm/sec. in the direction of the arrow. Check that the scale reading meets the required specification (2).

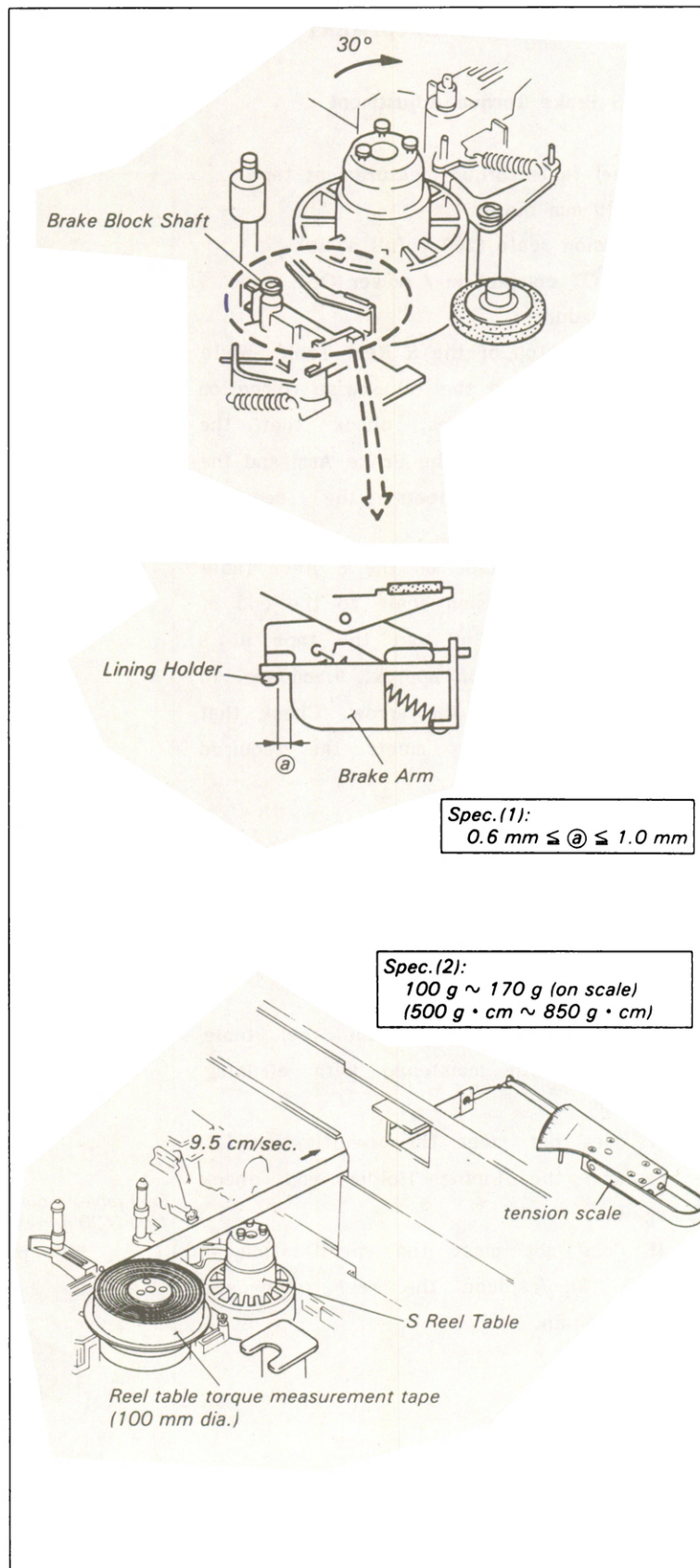
Adjustment procedure:

For Spec. (1)

- (1) Bend the Brake Block Shaft toward the reel table (or in the opposite direction) by hand.

For Spec. (2)

- (2) Clean the surface of the reel table with a cloth moistened with cleaning fluid.
- (3) If does not meet the specification (2), replace the Lining Holder and check again.
- (4) If does not meet the specification in Step (3), replace the reel table and check again.



6-1-3. REW Brake Torque Adjustment

Mode: REW mode

Tool: Reel table torque measurement tape
(100 mm dia.)

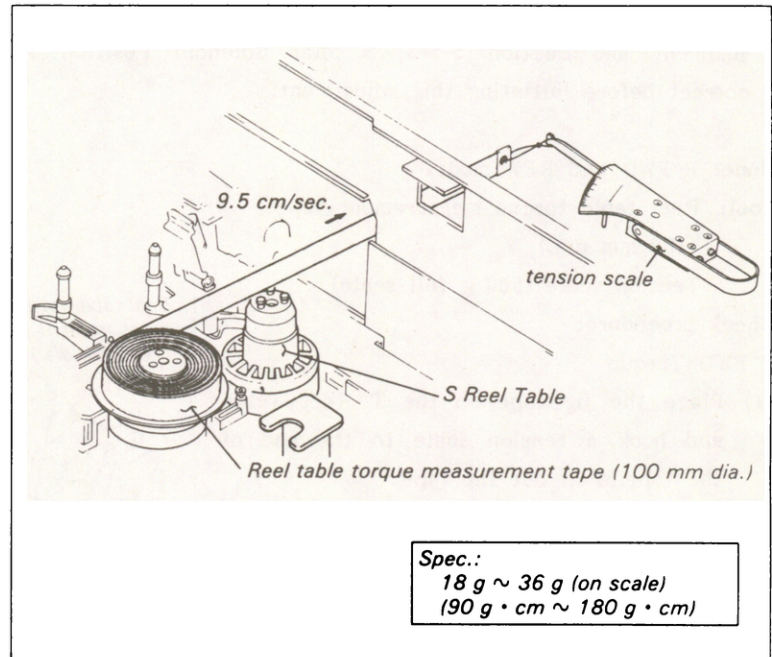
Tension scale (50 g full scale)

Check procedure:

- (1) Place the jig tape on the T Reel Table and hook a tension scale to the end of the jig tape.
- (2) Put the unit into the REW mode. Pull out the tape at a constant speed of approx. 9.5cm/sec. in the direction of the arrow. Check that the scale reading meets the required specification.

Adjustment procedure:

- (1) If does not meet the specification, replace the R Brake Ass'y and check again.
- (2) If does not meet the specification in Step (1), replace the Reel Table and check again.



6-2. F FWD / REW TORQUE ADJUSTMENT

- . It is required that the Section 5-7-2, T Idler Solenoid Position Adjustment and Section 5-7-3, S Idler Solenoid Position Adjustment are correct before initiating this adjustment.

Mode: F FWD and REW modes

Tool: Reel table torque measurement tape
(100 mm dia.),
Tension scale (500 g full scale)

Check procedure:

F FWD Torque

- (1) Place the jig tape on the T Reel Table and hook a tension scale to the end of the tape. Pull out the tape.
- (2) Put the unit into the F FWD mode. Let the tape be pulled at a constant speed of approx. 9.5cm/sec. Check that the scale reading meets the required specification.

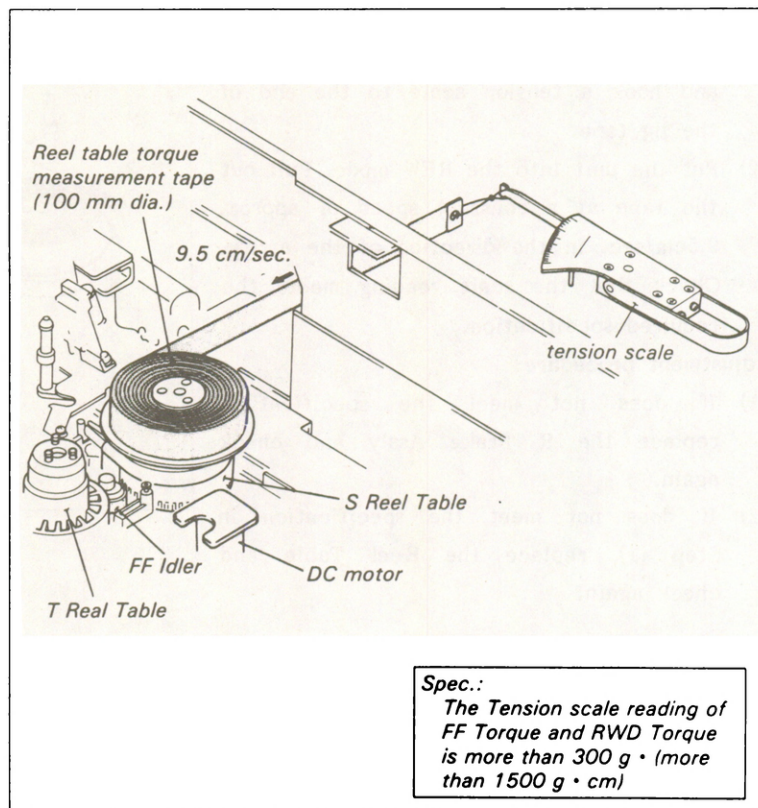
REW Torque

- (3) Install the jig tape on the S Reel Table and hook a tension scale to the end of the tape. Pull out the tape.
- (4) Put the unit into the REW mode. Let the tape be pulled at the constant speed of approx. 9.5cm/sec. Check that the scale reading meets the required specification.

Adjustment procedure:

Both F FWD Torque and REW Torque are adjusted by the following adjustment procedures.

- (1) Clean the surface of the Reel Table, FF idler and belt with a cloth moistened with cleaning fluid. Check the torque again.



- (2) If Step (1) does not meet the specification, put the unit into F FWD or REW mode without a cassette tape. Check that the dc voltage at the terminals of the dc motor is $10.5 \pm 1.5V$. If the dc voltage is out of specification, check that the circuit operation of the SY Board operates correctly.
- (3) If does not meet the specification in Steps (1) and (2), replace the Reel Table, FF idler and belt.

6-3. FWD TORQUE ADJUSTMENT

Tool: Special shorting clip
(Refer to the figure.)

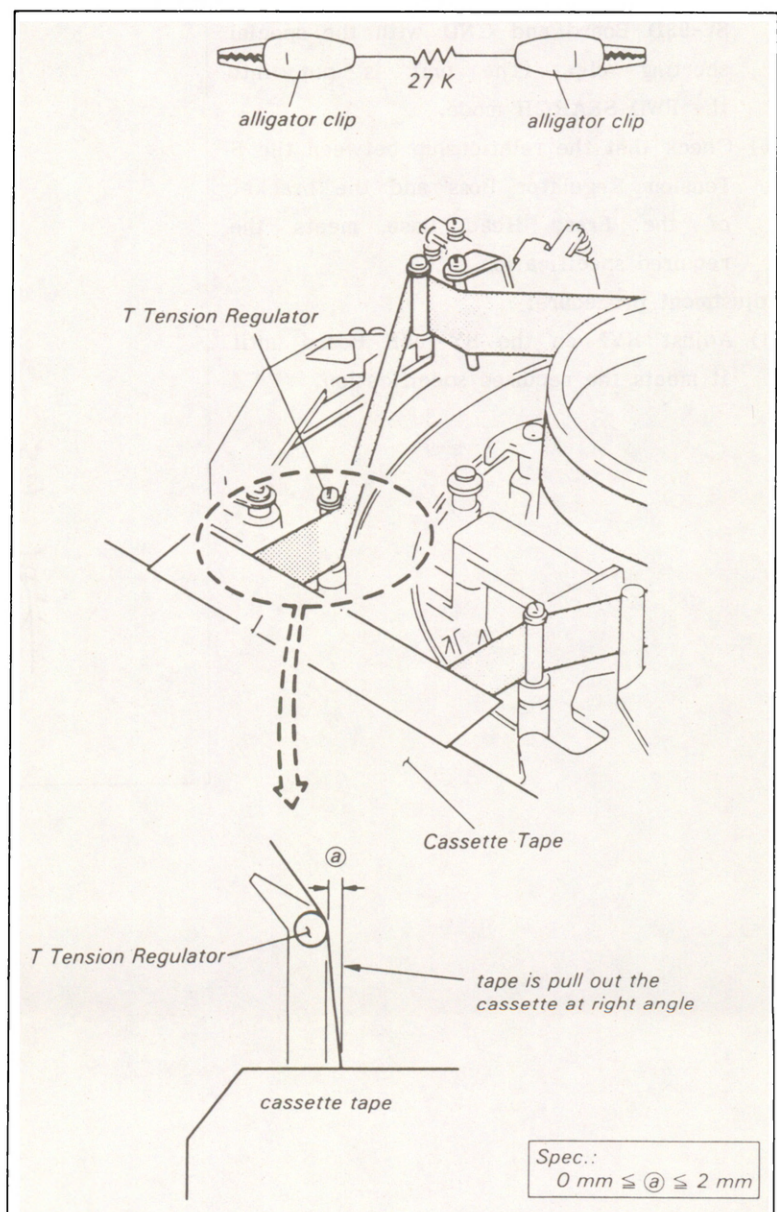
Mode: 1/2 FWD SEARCH mode

Check procedure:

- (1) Insert a KCS-20 cassette tape wound to the tape end portion.
- (2) Put the unit into the FWD SEARCH X 5 mode.
- (3) Short between TP3 on the SY-106B Board and GND with a shorting clip.
- (4) Short between TP11 on the SV-93D Board and GND with a shorting clip.
- (5) Short between pin 5 of IC 20 on the SV-93D Board and GND with the special shorting clip. (The unit is put into the FWD SEARCH mode.
- (6) Check that the relationship between the T Tension Regulator Arm and cassette tape meets the required specification.

Adjustment procedure:

- (1) Adjust RV3 on the SY-106B Board until it meets the required specification in the FWD mode.



6-4. REV TORQUE ADJUSTMENT

Tool: Special shorting clip

(Refer to Section 6-3.)

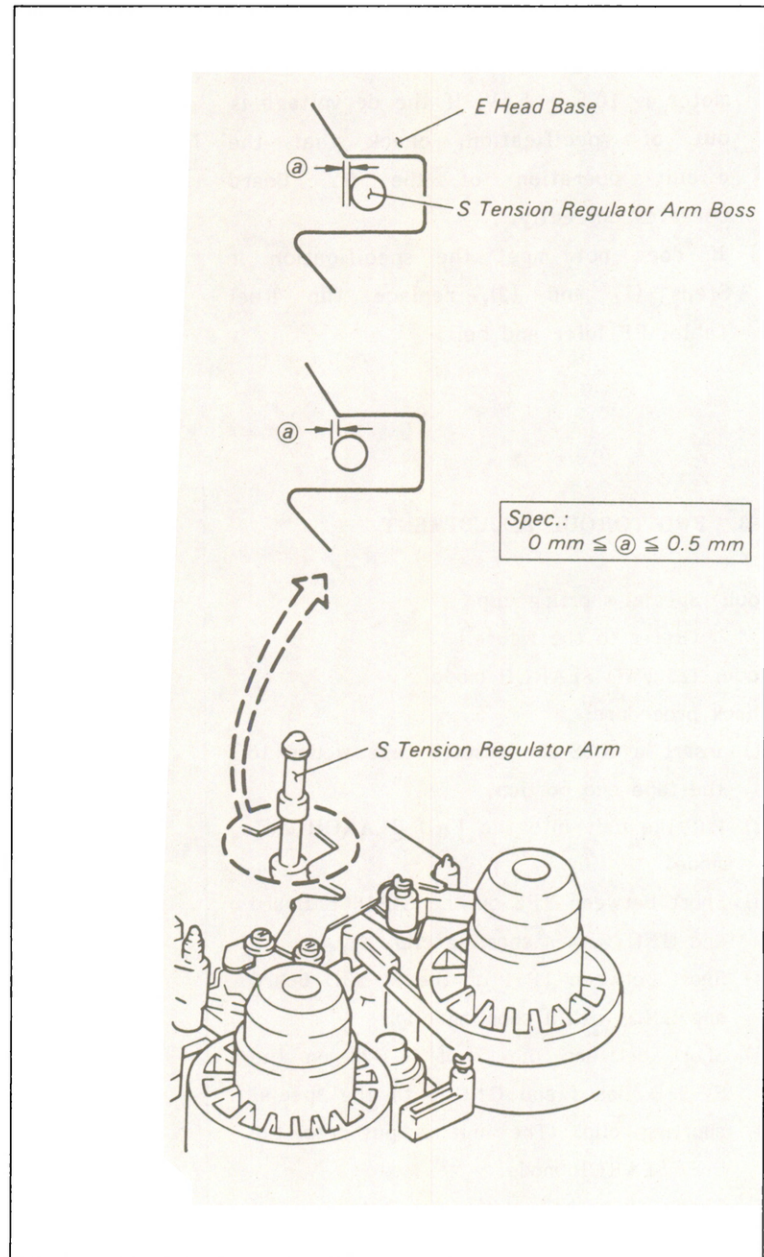
Mode: 1/2 REV SEARCH mode

Check procedure:

- (1) Insert a KCA-60 cassette tape wound to the tape beginning portion.
- (2) Put the unit into the FWD SEARCH X 5 mode.
- (3) Short between TP3 on the SY-106B Board and GND with a shorting clip.
- (4) Short between TP11 on the SV-93D Board and GND with a shorting clip.
- (5) Short between pin 5 of IC 20 on the SV-93D Board and GND with the special shorting clip. (The unit is put into the FWD SEARCH mode.)
- (6) Check that the relationship between the S Tension Regulator Boss and the bracket of the Erase Head Base meets the required specification.

Adjustment procedure:

- (1) Adjust RV2 on the SY-106B Board until it meets the required specification.



6-5. F FWD BACK TENSION ADJUSTMENT

- . It is required that the Section 5-6-3, S Tension Regulator Operating Position Adjustment is correct before initiating this adjustment.
- . It is required that the Section 6-6, FWD Back Tension Adjustment is performed after this adjustment.

Tool: Back tension adjustment jig
Reel table torque measurement tape
(100 mm dia.)
Tension scale (50 g full scale)

Preparation:

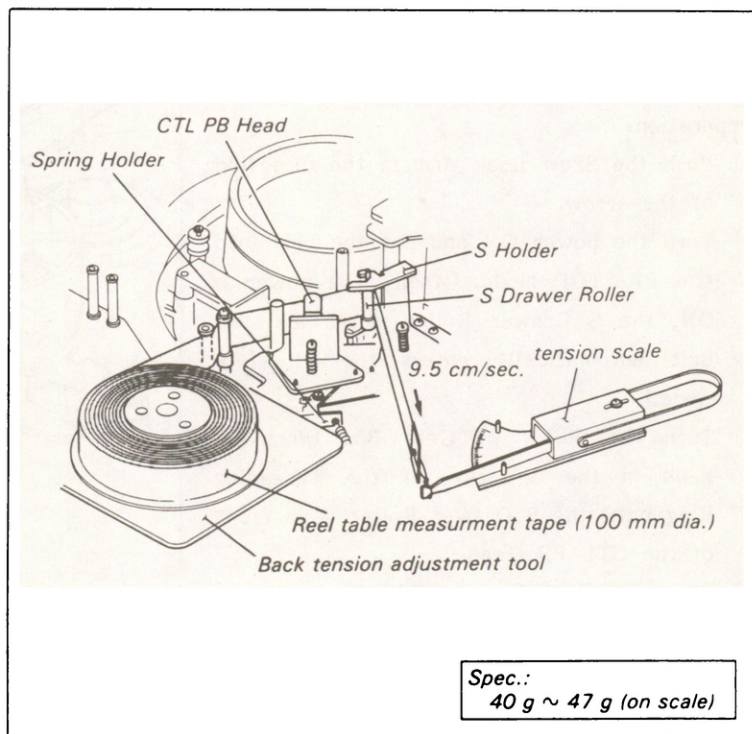
- (1) Turn the power ON and put the unit into the FR-STOP mode. (When the power is ON, the S Drawer Arm moves and the unit automatically enters the FR-STOP mode.)
- (2) Turn the Pulley of Gear Box Block by hand in the direction of the Threading Ring until the S Drawer Roller is in front of the CTL PB Head.
- (3) Place the Back Tension Adjustment Jig.
- (4) Place the jig tape on the S Reel Table and pull out the tape as shown in the figure. Check that the tape does not curl at the flange of the S Drawer Roller.
- (5) Turn the Pulley in the opposite direction in Step (2) until the S Drawer Roller is engaged with the S Holder.
- (6) Hook a tension scale to the end of the tape.

Check procedure:

- (1) Press the F FWD button and put the unit into the F FWD mode.
- (2) Pull out a tape at a constant speed of approx. 9.5cm/sec. in the direction of the arrow. Check that the scale reading meets the required specification.

Adjustment procedure:

- (1) Move the position of the Spring Holder with a flatblade screwdrivers (3mm dia.) to meet the required specification.
- (2) After the adjustment, perform the check procedures again.
- (3) Perform the Section 6-6, FWD Back Tension Adjustment.



6-6. FWD BACK TENSION ADJUSTMENT

. It is required that the Section 5-6-3, S Tension Regulator Operating Position Adjustment and the Section 6-5, F FWD Back Tension Adjustment are correct before initiating this adjustment.

Tool: Back tension adjustment jig
Reel table torque measurement tape
(100 mm dia.)
Tension scale (100 g full scale)

Preparation:

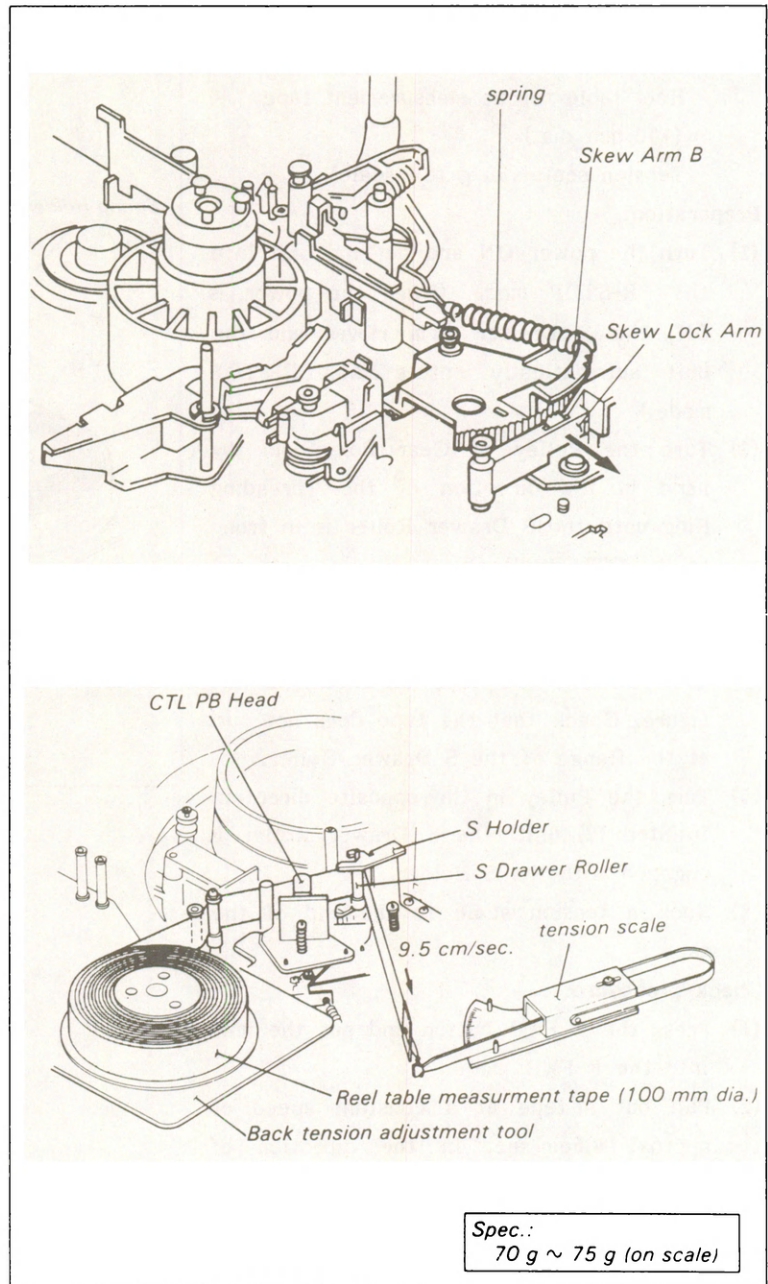
- (1) Push the Skew Lock Arm in the direction of the arrow.
- (2) Turn the power ON and put the unit into the FR-STOP mode. (When the power is ON, the S Drawer Roller moves and the unit automatically enters the FR-STOP mode.)
- (3) Turn the pulley of Gear Box Block by hand in the direction of the Threading Ring until the S Drawer Roller is in front of the CTL PB Head.
- (4) Place the Back Tension Adjustment Jig.
- (5) Place the jig tape on the S Reel Table and pull out the tape as shown in the figure. Check that the tape does not curl at the flange of the S Drawer Roller.
- (6) Turn the Pulley of the Gear Box in opposite direction in Step (3) until the S Drawer Roller is engaged with the S Holder.
- (7) Hook a tension scale to the end of tape.

Check procedure:

- (1) Press the PLAY button and put the unit into the PLAY mode.
- (2) Pull out the tape at a constant speed of approx. 9.5cm/sec. in the direction of the arrow. Check that the scale reading meets the required specification.

Adjustment procedure:

- (1) Adjust the position of the proper spring hook of the Skew Arm B to meet the required specification.
- (2) After adjustment, perform the check procedures again.



SECTION 7

TAPE RUN ALIGNMENT

7-1. F FWD/REW MODES TAPE PATH ADJUSTMENT

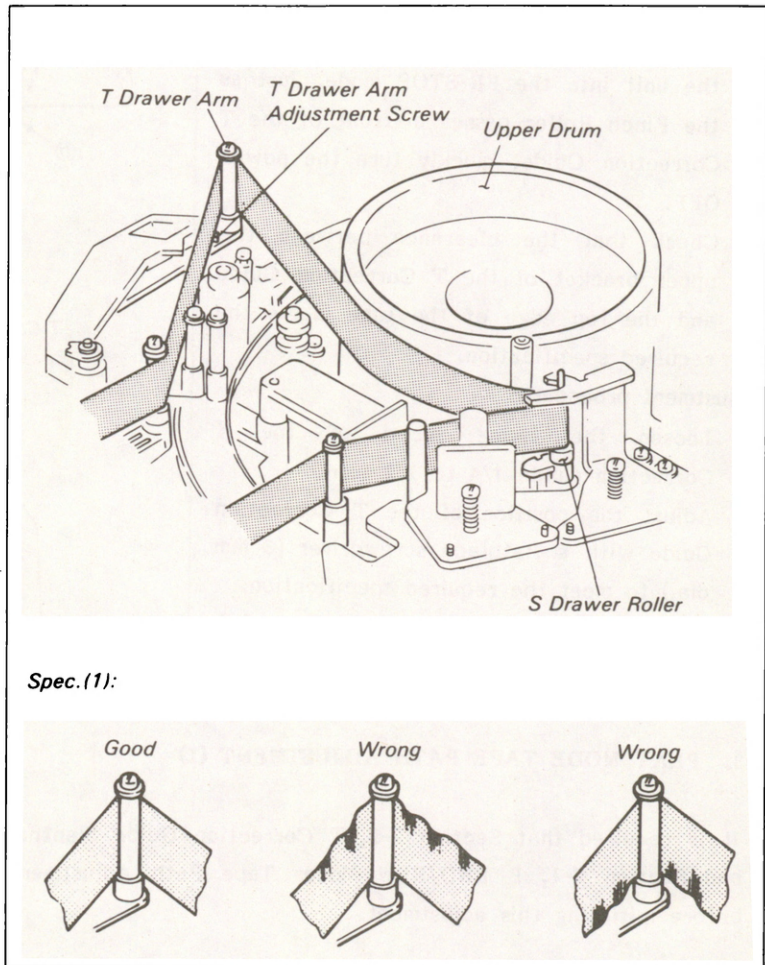
Mode: F FWD and REW modes

Check procedure:

- (1) Insert a KCA-60 cassette tape which has advanced about half way through (about 30 minutes). Put the unit into the REW mode.
- (2) Check that the tape tension is equal around the T Drawer Arm. (Spec.1)
- (3) Check that the tape runs without any curling at the upper or lower flange of the S Drawer Roller in the REW mode. (Spec. 2)
- (4) Put the unit into the STOP mode, and then into the REW mode. Check that the tape runs without any curling at the S Drawer Roller at the moment just after entering the REW mode. (Spec. 3)
- (5) Put the unit into the F FWD mode. Check that the tape runs without any curling at the S Drawer Roller and T Drawer Arm at the moment of just after entering the F FWD mode. (Spec. 4)

Adjustment procedure:

- (1) Adjust the slantness of the T Drawer Arm by turning the T Drawer Arm Adjustment Screw.



7-2. T CORRECTION GUIDE SLANTNESS ADJUSTMENT

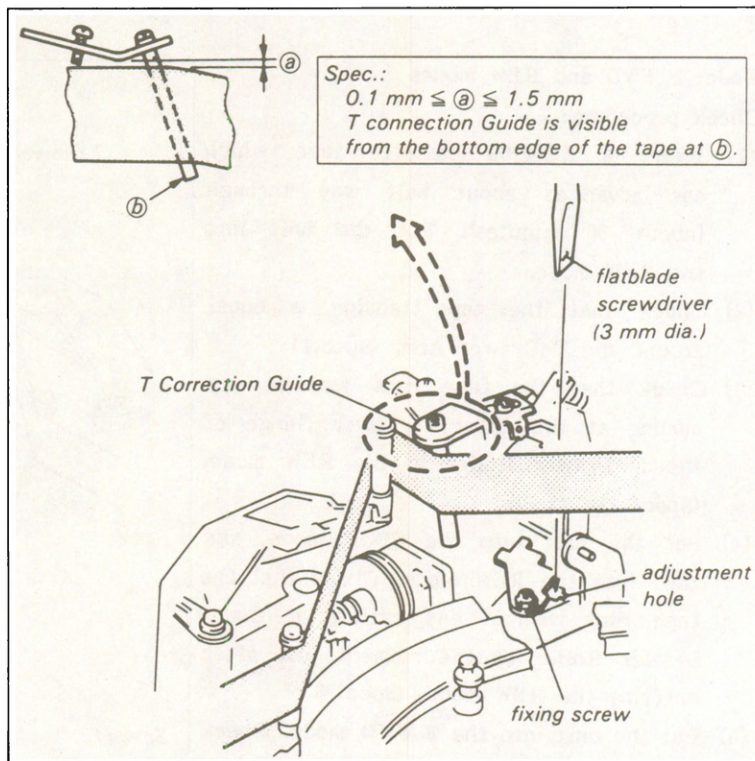
Tool: Dental mirror

Check procedure:

- (1) Insert a KCA-60 cassette tape and put the unit into the FR-STOP mode. Just as the Pinch Roller passes in front of the T Correction Guide, quickly turn the power OFF.
- (2) Check that the clearance between the upper bracket of the T Correction Guide and the top edge of the tape meets the required specification.

Adjustment procedure:

- (1) Loosen the fixing screw of the T Correction Guide 1/4 to 1/2 turn.
- (2) Adjust the position of the T Correction Guide with a flatblade screwdriver (3 mm dia.) to meet the required specification.
- (3) After adjustment, perform Section 7-3, PLAY Mode Tape Path Adjustment (1).



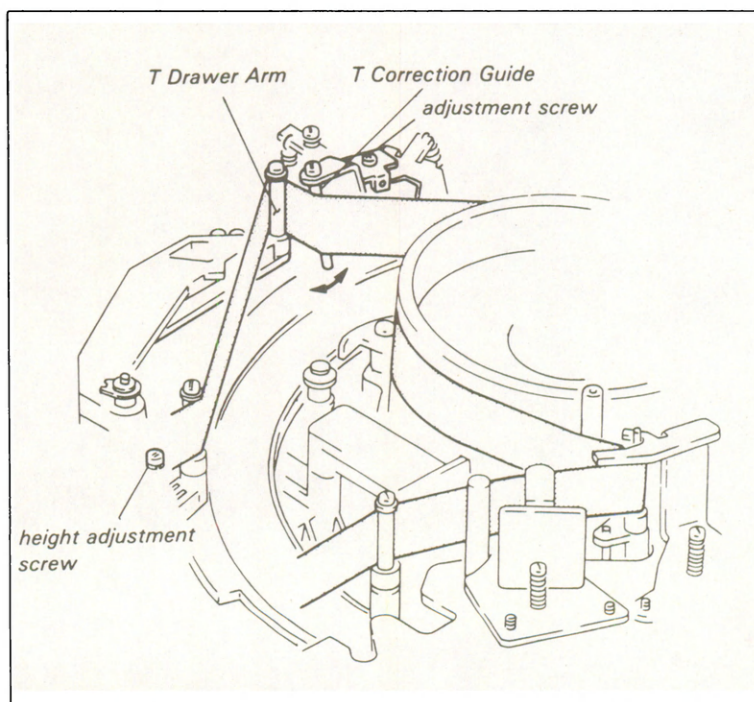
7-3. PLAY MODE TAPE PATH ADJUSTMENT (1)

. It is required that Section 7-2, T Correction Guide Slantness Adjustment and Section 7-1, F FWD/REW Modes Tape Path Adjustment are correct before initiating this adjustment.

Mode: PLAY mode with a cassette tape

Check procedure:

- (1) Insert a KCA-60 cassette tape which has been advanced about half way through (30 minutes). Put the unit into the PLAY mode.
- (2) Check that the tape runs without any curling at the upper or lower flange of the T Drawer Guide. (Spec.1)
- (3) Check that tape tension is equal at the top and bottom edges of the tape around the T Drawer Guide, and that the tape runs without any curling at the lower flange of the T Drawer Guide. (Spec.2)



Adjustment procedure:

For Spec.1

- (1) Adjust the height of the T Drawer Arm by turning the T Drawer Arm Height Adjustment Screw.

For Spec.2

- (2) Bend the T Correction Guide in the direction of the arrow. Turn the adjustment screw if necessary to meet the required specification.

7-4. PLAY MODE TAPE PATH ADJUSTMENT (2)

Tool: Dental mirror

Mode: PLAY mode with a cassette tape

Check procedure:

- (1) Insert a KCA-60 cassette tape which has been advanced about half way through (30 minutes). Put the unit into the PLAY mode.
- (2) At the * marks (two positions) in the figure, check that tape tension is equal at the top and bottom edges of the tape. (Spec.1)
- (3) Check that the clearance between the lower flange of the Threading Roller and the bottom edge of the tape meets the required specification (2).

Adjustment procedure:

- (1) Loosen the fixing screw at the bottom of the Threading Roller.

For Spec.1

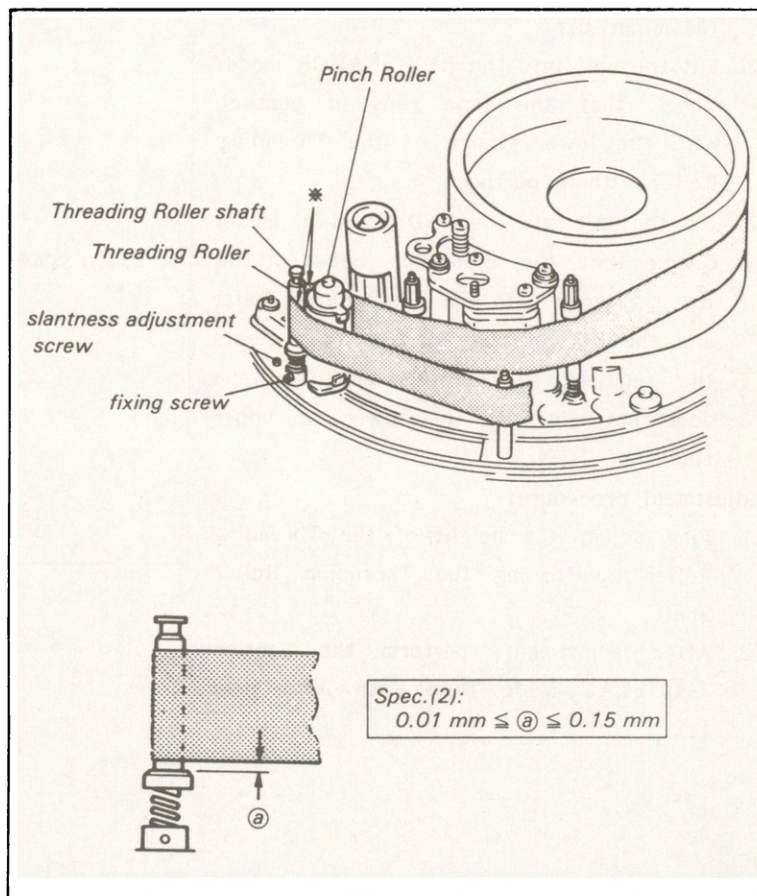
- (2) Adjust the slantness of the Threading Roller by turning the slantness adjustment screw.

NOTE:

- . After adjustment, perform Section 7-5, REV Mode Tape Path Adjustment and Section 7-6, Tape Path Adjustment Around The Pinch Roller.

For Spec.2

- (3) Adjust the height of the Threading Roller by turning the Threading Roller Shaft to meet the required specification.



- (4) Check that the slantness and the height meet the required specifications (1) and (2).
- (5) After adjustment, tighten the fixing screw of the Threading Roller and perform the check procedure.

7-5. REV MODE TAPE PATH ADJUSTMENT

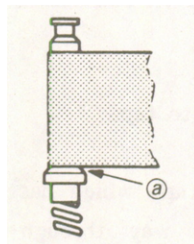
Check procedure:

- (1) Insert a KCA-60 cassette tape which has been advanced about half way through (30 minutes).
- (2) Put the unit into the REV SEARCH mode. Check that the tape runs in contact with the lower flange of the Threading Roller without curling.
- (3) Put the unit into the FWD SEARCH mode. Check that the clearance between the lower flange of the Threading Roller and the bottom edge of the tape meets the required specification and the tape does not curl at the lower or upper flange of TG-4.

Adjustment procedure:

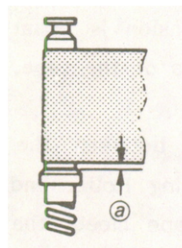
- (1) Fine adjust the height of the Threading Roller by turning the Threading Roller Shaft.
- (2) After adjustment, perform the Section 7-4, PLAY Mode Tape Path Adjustment (2).

<REV SEARCH>



Spec.:
The tape runs in contact with ③ without curling.

<FWD SEARCH>



Spec.:
 $0.01 \text{ mm} \leq \text{③} \leq 0.15 \text{ mm}$

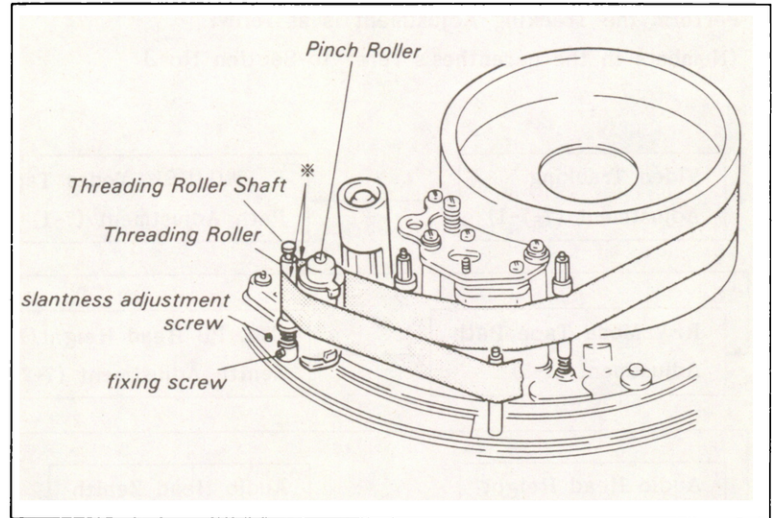
7-6. TAPE PATH ADJUSTMENT AROUND PINCH ROLLER

Check procedure:

- (1) Insert a KCA-60 cassette tape wound to the tape beginning portion.
- (2) When put the unit into the PLAY, REV SEARCH, FWD SEARCH modes, check that tape wrinkle does not appear, or disappear within 2 sec.

Adjustment procedure:

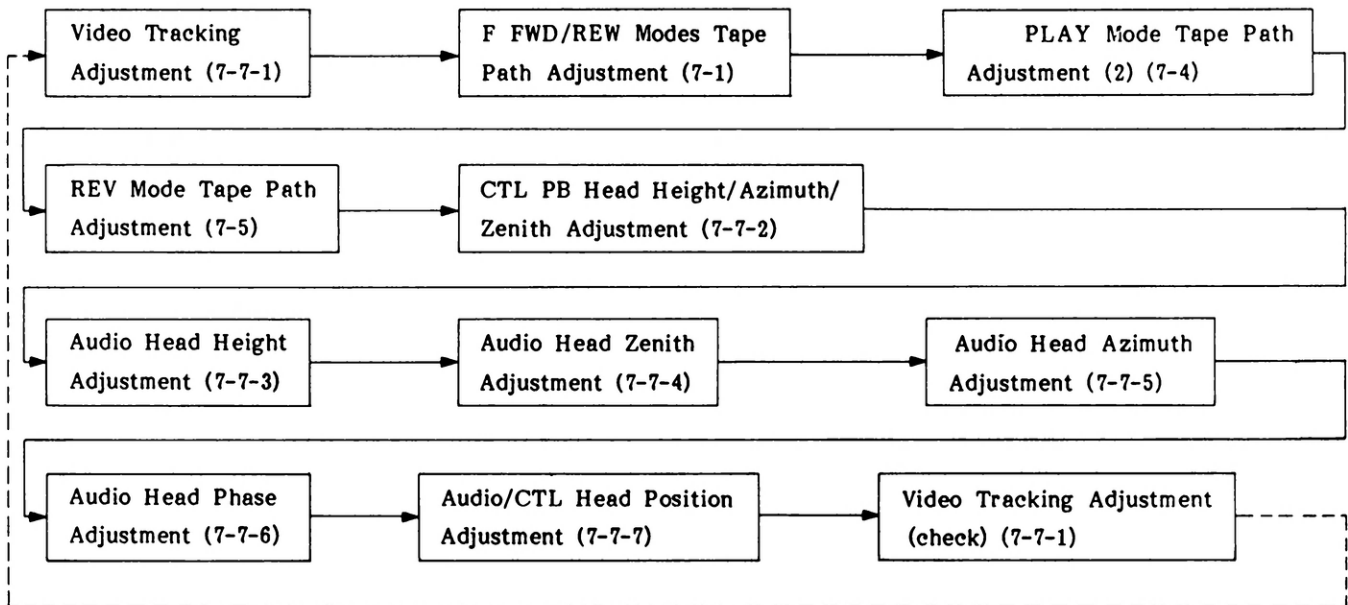
- (1) Adjust the slantness and height of the Threading Roller until it meets the required specification.
- (2) After adjustment, perform Section 7-4, PLAY Mode Tape Path Adjustment (2), Section 7-5, REV Mode Tape Path Adjustment, and Section 7-7, Tracking Adjustment.



7-7. TRACKING ADJUSTMENT

. Perform the Tracking Adjustment is as follow:

(Numbers in the parenthesis refer to Section Nos.)



7-7-1. Video Tracking Adjustment

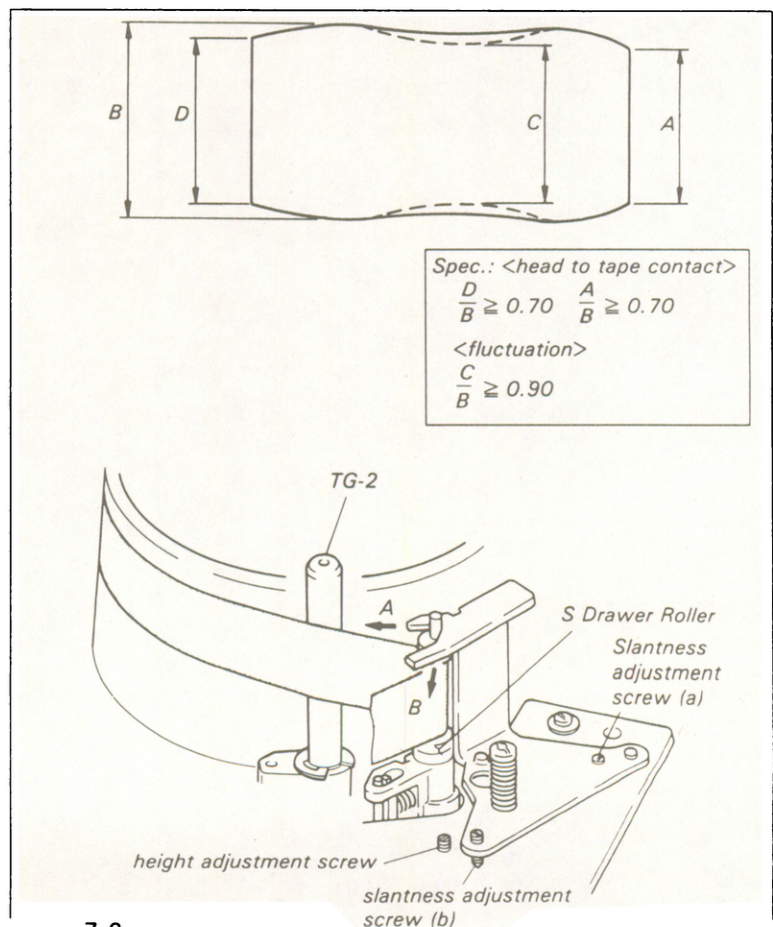
Tool: Alignment tape, RR5-2SC PAL
 Flatness Plate
 Oscilloscope
 Dental mirror

Preparation:

- (1) Connect the oscilloscope to TP1 on the VA-57A Board and EXT.TRIG to TP2 on the VA-57A Board.
- (2) Playback the color-bar signal portion of the alignment tape.

Check procedure:

- (1) While turning the TRACKING control knob, check that the RF waveform maintains a flat envelope while the amplitude increases and decreases.
- (2) Check that fluctuation and head-to-tape contact of the RF envelope are within the specification at the center detent position of the TRACKING control knob.



Adjustment procedure:

- The S Drawer Roller Block has three adjustment screws. These three adjustment screws function as follows:

(i) Slantness adjustment screw (a)

Turn this screw in the clockwise direction, and the S Drawer Roller slants in the direction of arrow A.

(ii) Slantness adjustment screw (b)

Turn this screw in the counterclockwise direction, and the S Drawer Roller slants in the direction of arrow B. This screw is used for removing tape curl at the upper flange of the S Drawer Roller. However, this screw is used only when the tape curls at the flange of the S Drawer Roller, even though the RF output waveform meets the required specification.

(iii) Height adjustment screw

Turn this screw in the clockwise direction, and the height of the S Drawer Roller lowers.

- When tape guides (TG-3, TG-4) are adjusted, loosen the locking screw about 1 turn and adjust the height by turning the height adjustment nut.

- When tracking at the entrance side of the drum is not good.

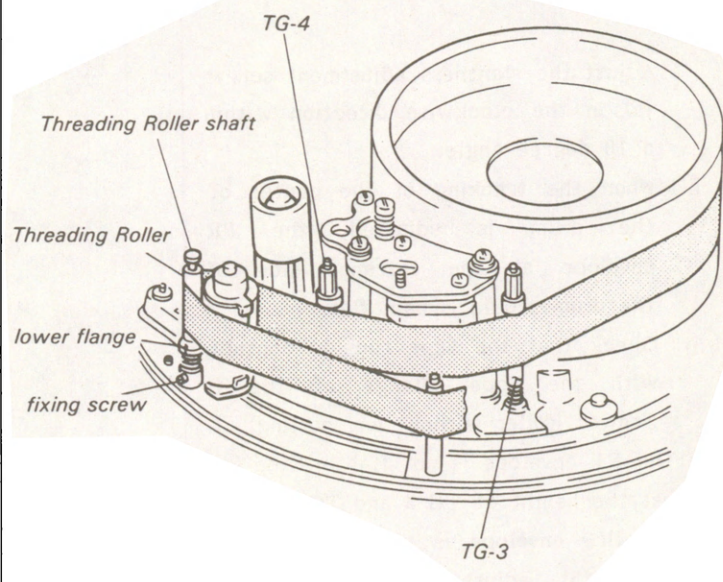
- (1) Turn the TRACKING control knob until the RF envelope amplitude is 70 to 80 % of maximum.
- (2) Adjust the height and the slantness of the S Drawer Roller by turning the height adjustment screw and the slantness adjustment screw (a) until the RF envelope of the entrance side is flat.

NOTE:

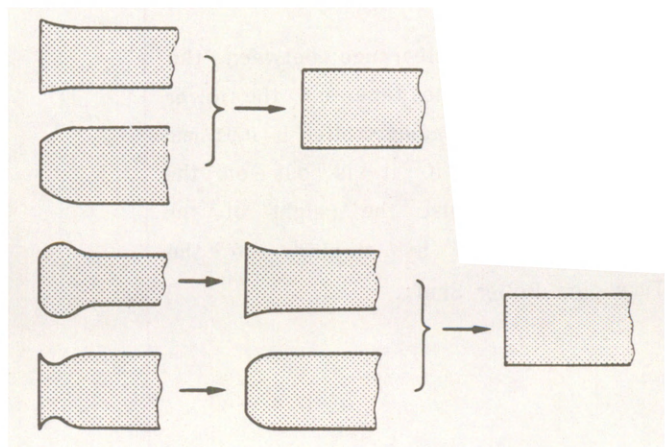
- (i) Check the surface of the running tape very carefully around the S Drawer Roller. Check that tape tension is equal at the top and bottom of the tape.
- (ii) Check that the tape runs in contact with the upper flange of the S Drawer Roller without any curling.

TG-3
TG-4

locking screw
adjustment nut



<entrance side>



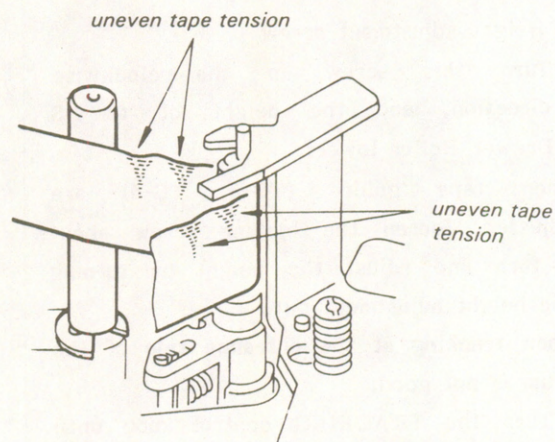
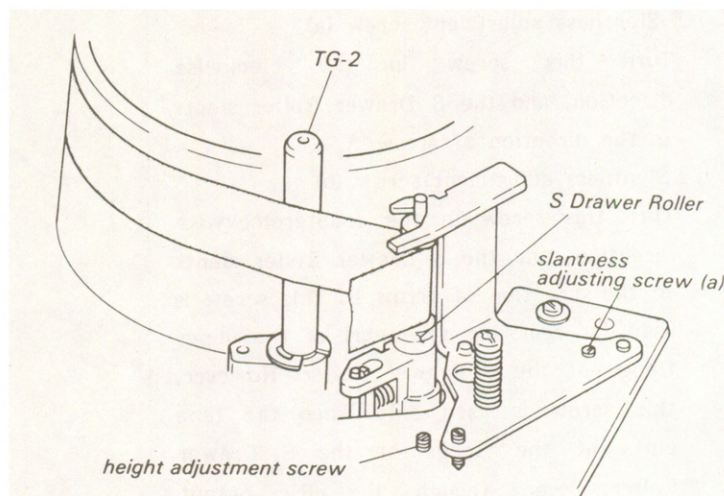
- When tracking at the center of the drum is not good.

(It is required that the Tracking adjustment at the entrance side of the drum is correct before initiating this adjustment.)

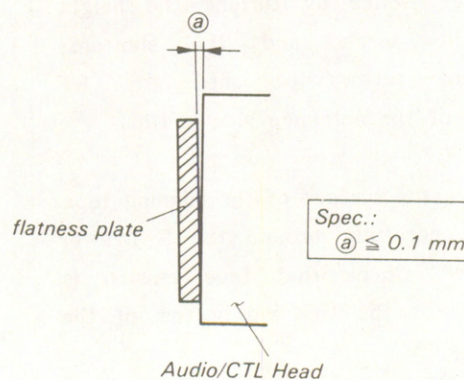
- (3) Turn the TRACKING control knob until the RF envelope amplitude is 70 to 80% of maximum.
- (4) Adjust the height and the slantness of the S Drawer Roller by turning the height adjustment screw and the slantness adjustment screw (a) until the RF envelope at the center of the drum is flat.

NOTE:

- (i) Adjust the slantness adjustment screw (a) in the clockwise direction within a 10 degree angle.
 - (ii) When the tracking of the center of the drum is adjusted, the FR envelope at the entrance side of the drum should remain flat.
 - (iii) Check that the tape runs in contact with the upper flange of the S Drawer Roller without any curling.
- (5) If the RF envelope is not flat in Step (4), adjust the height of TG-3 and TG-4.
 - (6) If the RF envelope is not flat in Steps (4) and (5), adjust the zenith of the Audio/CTL Head within the allowable range. Adjust the height of TG-3 and TG-4 again.
 - (7) Check that the clearance between the bottom edge of the tape and the lower flange of the Threading Roller is 0.01 mm to 0.15 mm. If it is out of the specification, adjust the height of the Threading Roller by turning the the Threading Roller Shaft.



<zenith adjustment for the Audio/CTL Head>



. When loosen the fixing screw of the Threading Roller, press the STOP button. When the Threading Roller comes near the Sub-ring Stopper, turn the power OFF. Loosen the fixing screw of the Threading Roller with a L-shaped hexagonal wrench. After adjustment, tighten the fixing screw and check that it meet the required specification.

. When tracking at the exit side of the drum is not good.

- (8) Turn the TRACKING control knob until the RF envelope amplitude is 70 to 80% of maximum.
- (9) If the RF envelope is not flat as shown in the figure 1, adjust the height of TG-4 until the RF envelope is flat. After this adjustment, adjust the height of TG-3 so that the tape runs in contact with the upper flange. If the RF envelope is not flat as shown in the figure 2, adjust the height of TG-3 and TG-4 until the RF envelope is flat. If it is not, adjust the zenith of the Audio/CTL Head within the allowable range. Adjust the height of TG-3 and TG-4 again.
- (10) Check that the clearance between the bottom edge of the tape and the lower flange of the Threading Roller is 0.01 mm to 0.15 mm. If it is out of the specification, adjust the height of the Threading Roller by turning the Threading Roller Shaft.

<entrance side>

Fig - 1

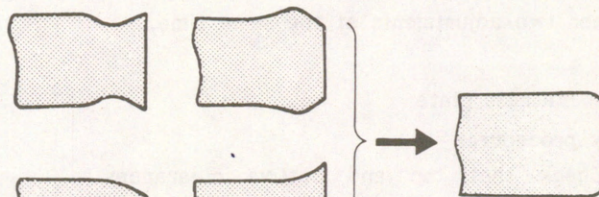
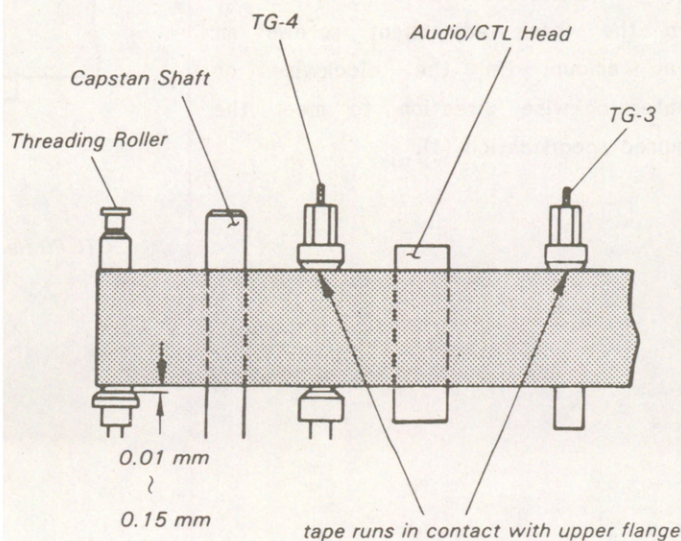
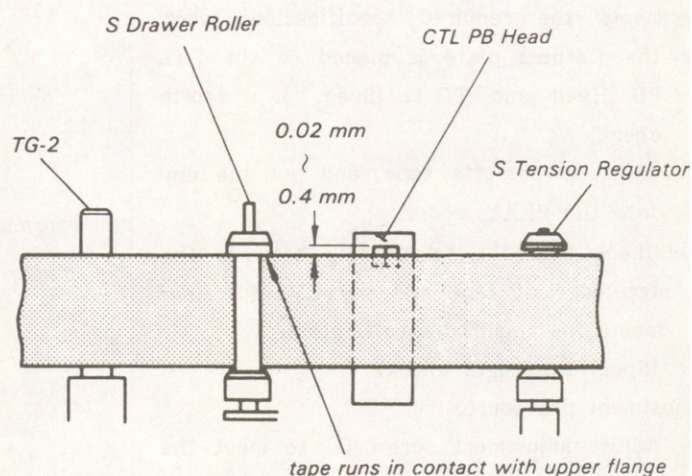


Fig - 2



7-7-2. CTL PB Head Height/Azimuth/Zenith Adjustments

. The CTL PB Head Height, Azimuth, and Zenith Adjustments are closely related. When performing any of these adjustments, always perform the other two adjustments at the same time.

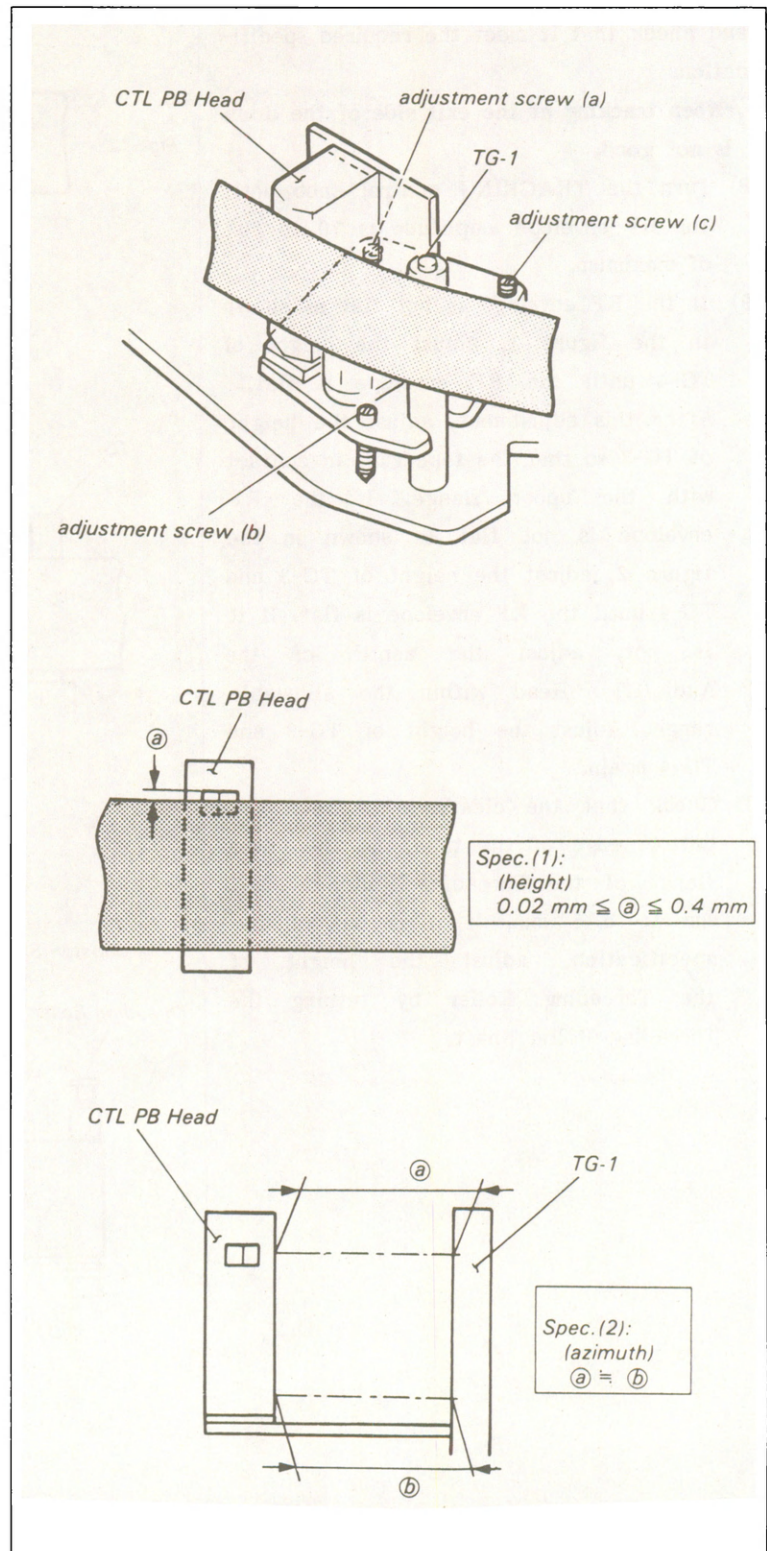
Tool: Flatness plate

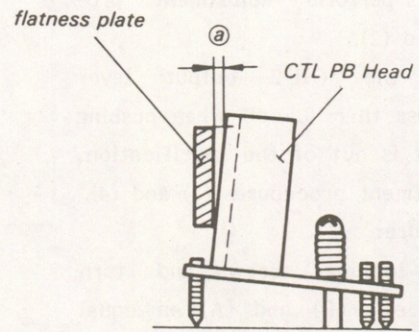
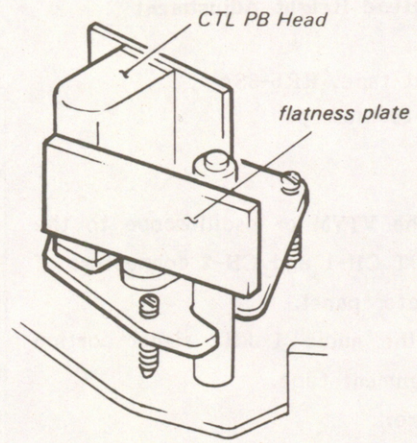
Check procedure:

- (1) Check that top and bottom clearances between the CTL PB Head and TG-1 meets the required specification. (Spec. 2 : azimuth check)
- (2) Check that the clearance between the CTL PB Head and the Flatness Plate meets the required specification, when the flatness plate is placed on the CTL PB Head and TG-1. (Spec. 3 : zenith check)
- (3) Insert a cassette tape, and put the unit into the PLAY mode.
- (4) Check that the relationship between the top edge of tape and the CTL PB Head meets the required specification. (Spec. 1 : height check)

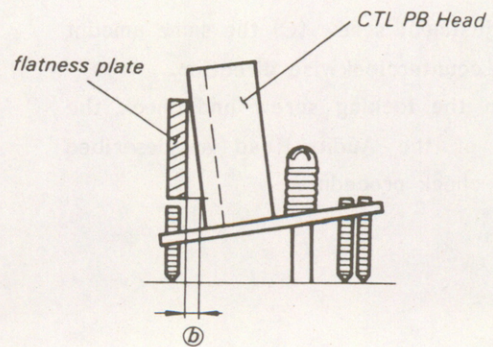
Adjustment procedure:

- (1) Adjust adjustment screw (a) to meet the required specification (2).
- (2) Adjust adjustment screw (b) to meet the required specification (3).
- (3) Turn the three adjustment screws an equal amount in the clockwise or counterclockwise direction to meet the required specification (1).





Spec. (3):
(zenith)
 $@ \leq 0.1 \text{ mm}$



7-7-3. Audio Head Height Adjustment

Tool: Alignment tape, RR5-3SA
VTVM or oscilloscope

Preparation:

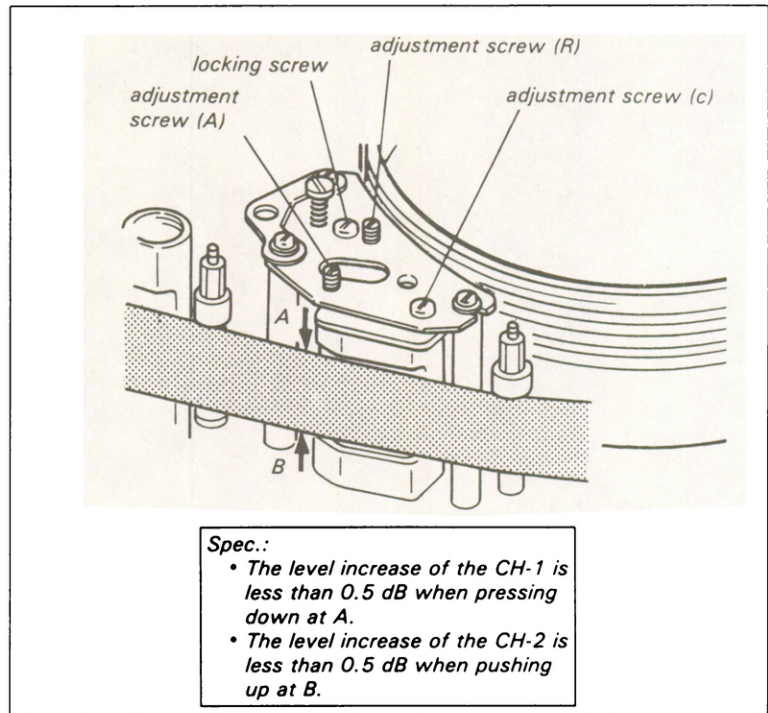
- (1) Connect the VTVM or oscilloscope to the AUDIO OUT CH-1 and CH-2 connectors of the connector panel.
- (2) Playback the audio 1 kHz signal portion of the alignment tape.

Check procedure:

- (1) Check that the CH-1 output level increase is less than 0.5 dB when pressing down at A. If it is out of the specification, perform adjustment procedures (1) and (2).
- (2) Check that the CH-2 output level increase is less than 0.5 dB when pushing up at B. If it is out of the specification, perform adjustment procedures (3) and (4).

Adjustment procedure:

- (1) Loosen the locking screw and turn adjustment screws (R) and (A) an equal amount in the counterclockwise direction. Turn adjustment screw (C) the same amount in the clockwise direction.
- (2) Tighten the locking screw and check the height of the Audio Head as described in the check procedure.
- (3) Loosen the locking screw and turn adjustment screws (R) and (A) an equal amount in the clockwise direction. Turn the adjustment screw (C) the same amount in the counterclockwise direction.
- (4) Tighten the locking screw and check the height of the Audio Head as described in the check procedure.



7-7-4. Audio Head Zenith Adjustment

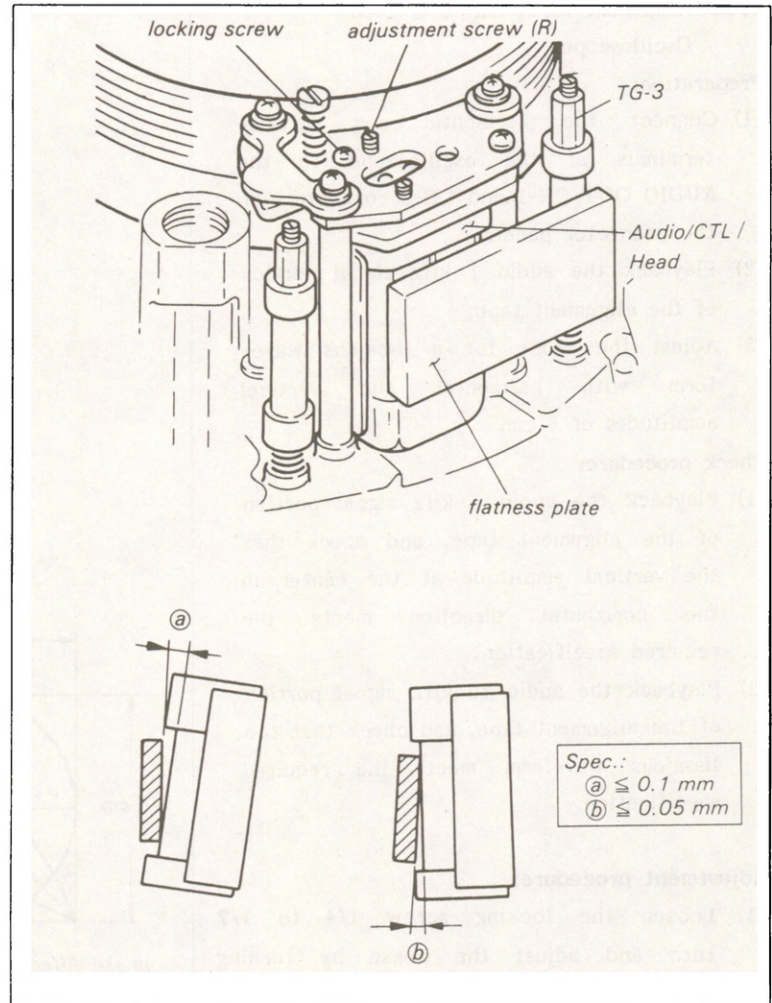
Tool: Flatness Plate

Check procedure:

- (1) When the Flatness Plate is set on the Audio Head and TG-3, check that the clearance between the Audio Head and the Flatness Plate meets the required specification.

Adjustment procedure:

- . When the clearance is out of spec. at the top of the Audio Head.
 - (1) Turn adjustment screw (R) in the counterclockwise direction.
 - (2) Tighten the locking screw and check the zenith again.
- . When the clearance is out of spec. at the bottom of the Audio Head.
 - (3) Loosen the locking screw 1/4 to 1/2 turn.
 - (4) Turn adjustment screw (R) in the clockwise direction.
 - (5) Tighten the locking screw and check the zenith again.



7-7-5. Audio Head Azimuth Adjustment

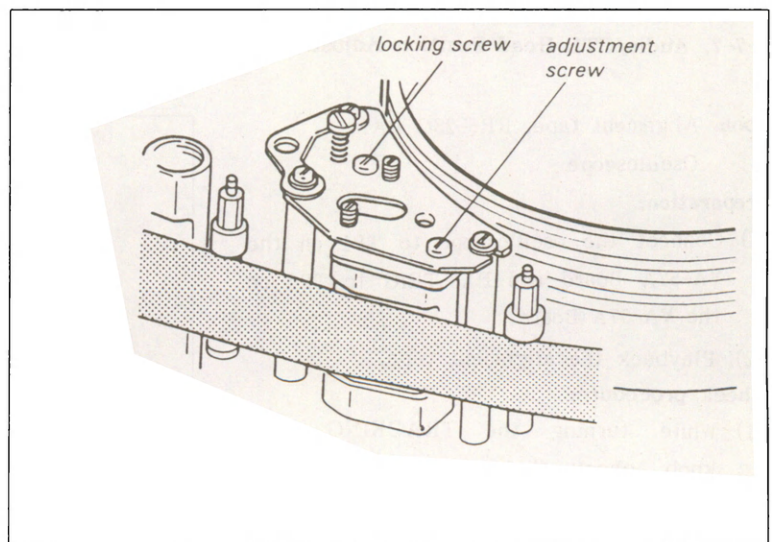
Tool: Alignment tape, RR5-2SC PAL
VTVM or oscilloscope

Preparation:

- (1) Connect the VTVM or oscilloscope to the AUDIO OUT CH-1 or CH-2 connector of the connector panel.
- (2) Playback the audio 10 kHz signal portion of the alignment tape.

Adjustment procedure:

- (1) Loosen the locking screw and adjust the audio output level to maximum by turning the adjustment screw.
- (2) Tighten the locking screw and perform the check procedure.



7-7-6. Audio Head Phase Adjustment

Tool: Alignment tape, RR5-2SC PAL
Oscilloscope

Preparation:

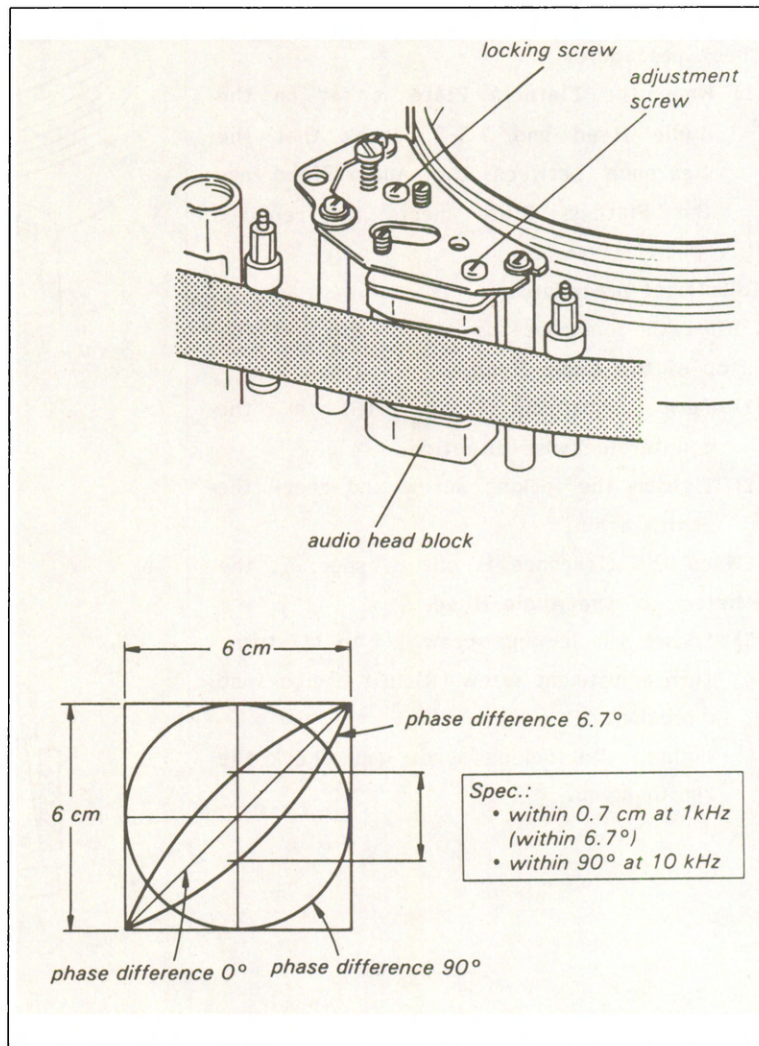
- (1) Connect the horizontal and vertical terminals of the oscilloscope to the AUDIO OUT CH-1 and CH-2 connectors of the connector panel.
- (2) Playback the audio 1 kHz signal portion of the alignment tape.
- (3) Adjust the scope for a lissajous waveform with horizontal and vertical amplitudes of 6 cm.

Check procedure:

- (1) Playback the audio 1 kHz signal portion of the alignment tape, and check that the vertical amplitude at the center in the horizontal direction meets the required specification.
- (2) Playback the audio 10 kHz signal portion of the alignment tape, and check that the lissajous waveform meets the required specification.

Adjustment procedure:

- (1) Loosen the locking screw 1/4 to 1/2 turn and adjust the phase by turning the adjustment screw.
- (2) Tighten the locking screw and check the phase again.



7-7-7. Audio/CTL Head Position Adjustment

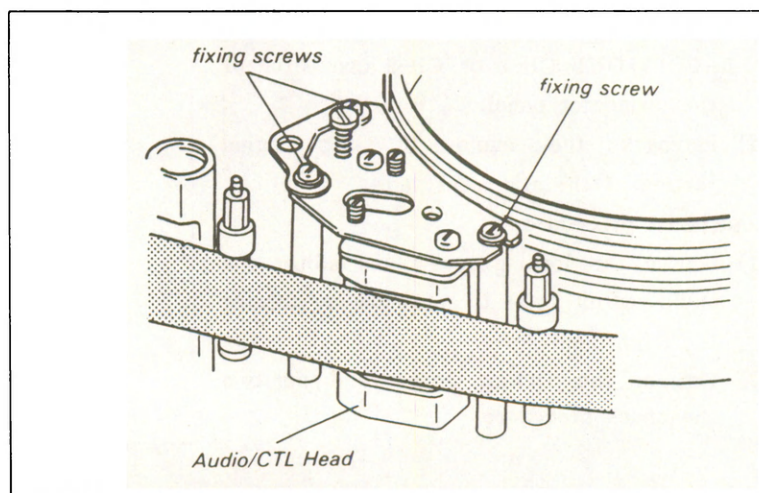
Tool: Alignment tape, RR5-2SC PAL
Oscilloscope

Preparation:

- (1) Connect the oscilloscope to TP1 on the VA-57A Board and EXT.TRIG to TP2 on the VA-57A Board.
- (2) Playback the alignment tape.

Check procedure:

- (1) While turning the TRACKING control knob, check that the RF envelope has maximum amplitude at the center detent position of the TRACKING control knob.



Adjustment procedure:

- (1) Loosen the three fixing screws 1/4 to 1/2 turn.
- (2) Adjust the position of the Audio/CTL Head with a eccentric screwdriver to meet the required specification.

7-8. VIDEO HEAD DIHEDRAL ADJUSTMENT

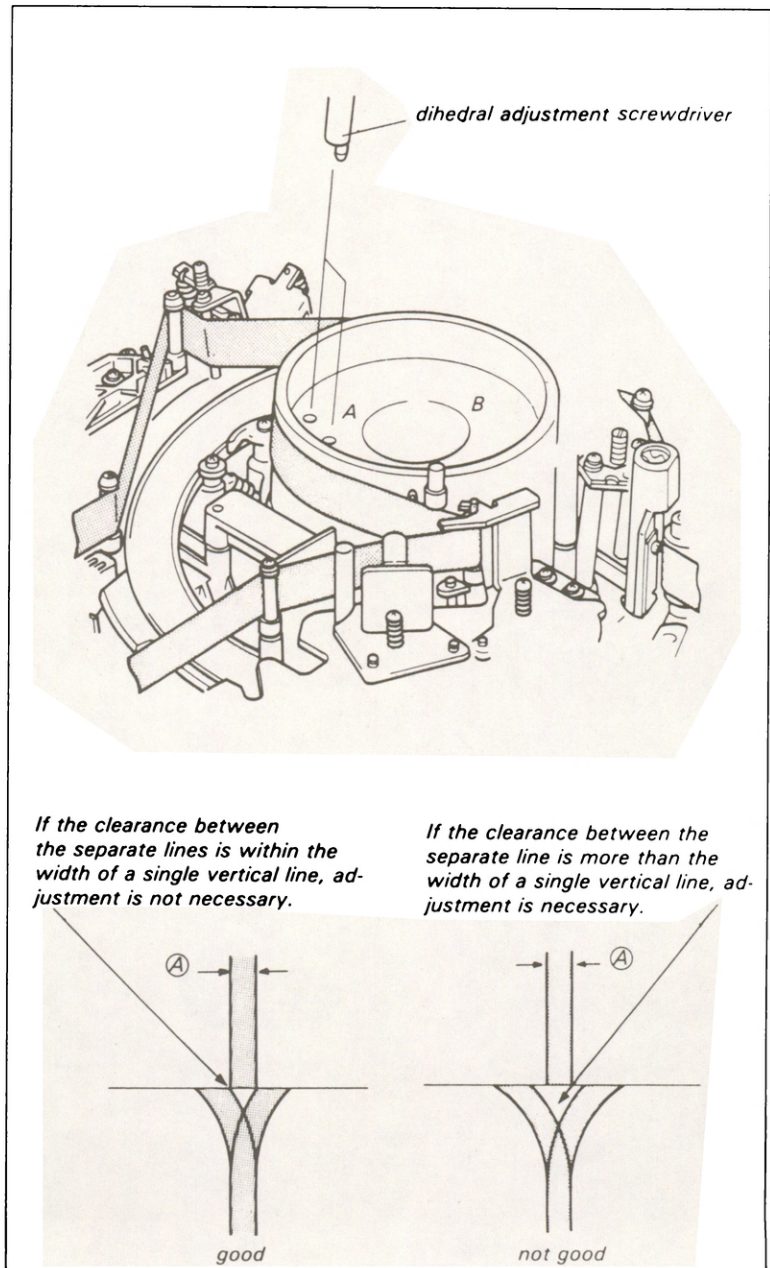
Tool: Dihedral adjustment screwdriver
Alignment tape, RR5-2SC PAL
Monitor TV

Check procedure

- (1) Playback the monoscope signal portion of the alignment tape.
- (2) Check the distortion of the monoscope signal under the switching pulse. If the clearance between the separate lines is within the width of a single vertical line, adjustment is not necessary. If the clearance of the separate lines is more than the width of a vertical line, then adjustment is necessary.

Adjustment procedure:

- (1) Insert an eccentric screwdriver into the adjustment hole of the white lead and perform the dihedral adjustment.
- (2) Play back the monoscope signal portion. If the distortion has become worse, insert an eccentric screwdriver in the other adjustment hole and perform the dihedral adjustment.



SECTION 8

POWER SUPPLY/SYSTEM CONTROL ALIGNMENT

(Equipment Required)

- DC Voltmeter

Alignment Tape: RR5-2SC PAL (Part No. 8-960-035-61)

8-1. SWITCHING REGULATOR ADJUSTMENT

8-1-1. REG+12V Adjustment

(For EK)

machine conditions for adjustment	specifications	adjustments
• Play back the color bar segment of the alignment tape.	CN201-1/UR-14E $12.1 \pm 0.02 \text{ Vdc}$	RV651/UR-14E

NOTE: If the REG 12V adjustment is attempted, re-alignment of the video system and servo system is required.

Do not attempt adjustment of the REG 12V power supply unless the units performance is obviously poor due to incorrect power supply voltage. If adjustments are made to the power supply, re-alignment of the video and servo systems is necessary.

(For UC)

machine conditions for adjustment	specifications	adjustments
• Play back the color bar segment of the alignment tape.	CN201-1/UR-14 $12.1 \pm 0.02 \text{ Vdc}$	RV651/UR-14

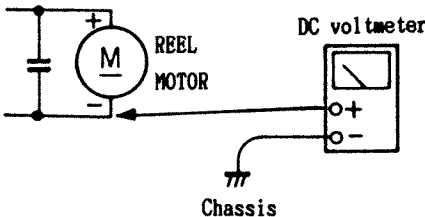
NOTE: If the REG 12V adjustment is attempted, re-alignment of the video system and servo system is required.

Do not attempt adjustment of the REG 12V power supply unless the units performance is obviously poor due to incorrect power supply voltage. If adjustments are made to the power supply, re-alignment of the video and servo systems is necessary.

8-2. TAPE SENSOR BALANCE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> Insert a cassette tape. STOP mode 	TP2/SY-106B(J-2) $6.0 \pm 0.2 \text{ Vdc}$	RV1/SY-106B(J-2)

8-3. REEL MOTOR STILL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> PLAY-PAUSE mode without inserting a cassette tape. Check that the reel motor rotation stops. 	Reel motor (-) side/RM-39  $\text{DC voltage} = 400 \pm 20 \text{ mV}$	RV4/SY-106B(H-2)

. For reel torque adjustment, refer to Section 6.

RV3/SY-106B.....6-3. FWD Torque Adjustment

RV2/SY-106B.....6-4. REV Torque Adjustment

SECTION 9

SERVO SYSTEM ALIGNMENT

(Equipment Required)

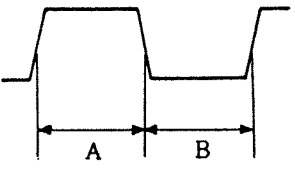
- Dual-trace Oscilloscope
- Frequency Counter
- AC Voltmeter
- Alignment Tape: RR5-2SC PAL (Part No.8-960-035-61) and RR5-3SA NTSC (Part No.8-960-015-04)

Real Time Counter (min.)	Tape Counter	Video Track	Audio Track
00:00 - 04:00	000 - 100	Monoscope	3 kHz, 0 dB
04:00 - 09:00	100 - 208	Color-bar	_____
09:00 - 14:00	208 - 300	R-F sweep	_____
14:00 - 16:00	300 - 335	Mod. 20T pulse	1 kHz, 0 dB
16:00 - 18:00	335 - 367	M.S. w/burst	10 kHz, - 10 dB
18:00 - 20:00	367 - 398	Pseudo C.B. for DOC adj.	_____

9-1. CTL HEAD POSITION ADJUSTMENT

Refer to Section 7-7.

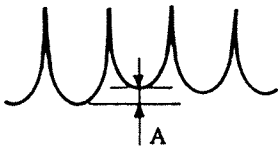
9-2. CAPSTAN FREE SPEED ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
NTSC • SYSTEM SELECT sw: NTSC • Play back the color bar segment of the alignment tape RR5-3SA.	TP3/SV-93D(G-4)  $A = B \pm 5 \%$ (Take the reading at the center of the jitter.)	NTSC adj. ⒶRV100/SV-93D(G-4)
PAL • SYSTEM SELECT sw: PAL • Play back the color bar segment of the alignment tape RR5-2SC PAL.		PAL adj. ⒶRV105/SV-93D(G-4) TRIG: INT

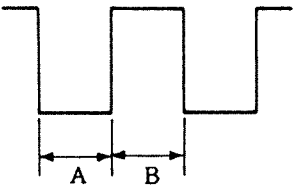
9-3. CAPSTAN SEARCH SPEED ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
• SYSTEM SELECT sw: PAL • Short between TP3 and E1/SY-106B with a shorting clip. • Short between TP11 and E1/SV-93D with a shorting clip. • Play back the color bar segment of the alignment tape RR5-2SC PAL. • SEARCH mode • After the adjustment is completed, remove the shorting clips.	TP27/SV-93D(G-4) Frequency counter $60 \pm 10 \text{ Hz}$	ⒶRV101/SV-93D(H-5)

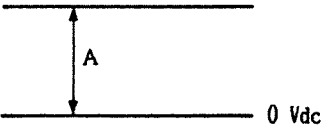
9-4. CAPSTAN STOP SERVO ADJUSTMENT (I)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> · SYSTEM SELECT sw: PAL · Play back the color bar segment of the alignment tape RR5-2SC PAL. · Short between TP16 and TP19/SV-93D with a shorting clip. · After the adjustment is completed, remove the shorting clips. 	<p>TP21/SV-93D(H-6)</p>  <p>$A \leq 40 \text{ mVp-p}$</p>	<p>RV106/SV-93D(I-5)</p> <p>TRIG: INT</p>

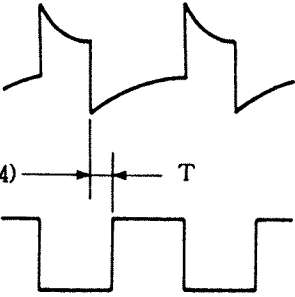
9-5. CAPSTAN FWD/REV DETECTION ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> · SYSTEM SELECT sw: PAL · Play back the color bar segment of the alignment tape RR5-2SC PAL. 	<p>TP25/SV-93D(G-6)</p>  <p>$A = B \pm 10 \%$ $(A + B = 1.1\text{ms})$</p>	<p>RV201/SV-93D(I-5)</p> <p>TRIG: INT</p>

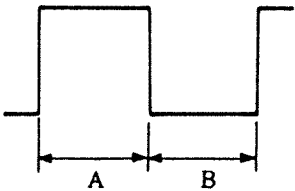
9-6. CAPSTAN STOP SERVO ADJUSTMENT (2)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • SYSTEM SELECT sw: PAL • Play back the color bar segment of the alignment tape RR5-2SC PAL, and set to the PAUSE mode. • Short between TP6 and TP22/SV-93D with a shorting clip. • After the adjustment is completed, remove the shorting clip. 	<p>TP26/SV-93D (E-3)</p>  <p>$A = 1.0 \pm 0.1 \text{ V}$</p>	<p>RV107/SV-93D (H-4)</p> <p>TRIG: INT</p>

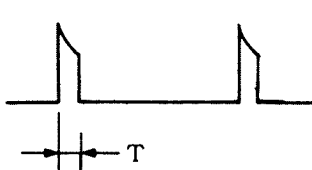
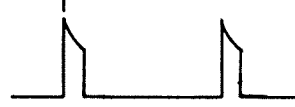
9-7. TRACKING MULTI ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p>NTSC</p> <ul style="list-style-type: none"> • SYSTEM SELECT sw: NTSC • Set the TRACKING control to the center click position. • Play back the color bar segment of the alignment tape RR5-3SA. 	<p>TP4/SV-93D (K-4)</p>  <p>TP9/SV-93D (K-4)</p> <p>$T = 0 \pm 100 \mu\text{sec}$ (Take the reading at the center of the jitter.)</p>	<p>NTSC adj. RV407/SV-93D (H-2)</p>
<p>PAL</p> <ul style="list-style-type: none"> • SYSTEM SELECT sw: PAL • Set the TRACKING control to the center click position. • Play back the color bar segment of the alignment tape RR5-2SC PAL. 		<p>PAL adj. RV406/SV-93D (H-2)</p> <p>TRIG: INT (TP9/SV-93D)</p>

9-8. DRUM FREE SPEED ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
NTSC · SYSTEM SELECT sw: NTSC · Play back the color bar segment of the alignment tape RR5-3SA.	TP15/SV-93D(E-2)  $A = B \pm 5 \%$	NTSC adj. ⒶRV401/SV-93D(M-3)
PAL · SYSTEM SELECT sw: PAL · Play back the color bar segment of the alignment tape RR5-2SC PAL.		PAL adj. ⒶRV402/SV-93D(M-3) TRIG: INT

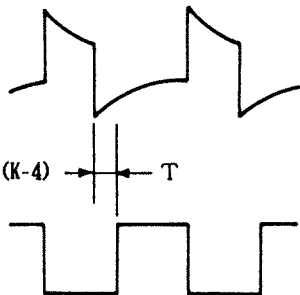
9-9. DRUM AFC LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
NTSC · SYSTEM SELECT sw: PAL · Play back the color bar segment of the alignment tape RR5-2SC PAL. · PB and PAUSE modes	TP8/SV-93D(K-2) PB mode  PAUSE mode  $T = 0 \pm 0.1 \mu\text{sec}$	ⒶRV2/SV-93D(G-3)
PAL · SYSTEM SELECT sw: NTSC · Play back the color bar segment of the alignment tape RR5-3SA. · PB and PAUSE modes		ⒶRV3/SV-93D(G-2)

9-10. DRUM AFC TRANSIENT ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • SYSTEM SELECT sw: PAL 	TP17/SV-93D(D-2)	ⒶRV1/SV-93D(F-2)
<ul style="list-style-type: none"> • Play back the color bar segment of the alignment tape RR5-2SC PAL. 	DC level in the PAUSE mode = Reference DC level in the PB mode = Reference \pm 0.1 Vdc	
<ul style="list-style-type: none"> • PB and PAUSE modes 		

9-11. INSTANT START ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> · SYSTEM SELECT sw: PAL · Set the TRACKING control to the center click position. · Play back the color bar segment of the alignment tape RR5-2SC PAL, and set to the PAUSE mode. · Short between TP11 and E1/SV-93D with a shorting clip. · Cancel the PAUSE mode · After the adjustment is completed, remove the shorting clip. 	<p>TP4/SV-93D(K-4)</p>  <p>TP9/SV-93D(K-4)</p> <p>$T = 0 \pm 1 \text{ msec}$ (Take the reading at the center of the jitter.)</p>	<p>RV102/SV-93D(H-3)</p> <p>TRIG: ING (TP9/SV-93D)</p>

9-12. SWITCHING POSITION ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> SYSTEM SELECT sw: NTSC Play back the color bar segment of the alignment tape RR5-3SA. Short between TP8 and E501/SV-93D with a shorting clip. Short between TP5 and E501/SV-93D with a shorting clip. Set the TRACKING control to the center click position. 	<p>VIDEO OUT connector</p>	<p>CH-A: RV405/SV-93D (I-2)</p> <p>CH-B: RV403/SV-93D (L-3)</p>
<p>↓</p> <ul style="list-style-type: none"> SYSTEM SELECT sw: PAL Play back the color bar segment of the alignment tape RR5-2SC PAL. After the adjustment is completed, remove the shorting clips. 	<p>$T = 6.5 \pm 0.5 \text{ H}$</p>	<p>CH-B: RV404/SV-93D (L-3)</p> <p>TRIG: TP9/SV-93D (TV-V)</p>

SECTION 10

AUDIO SYSTEM ALIGNMENT

(Equipment Required)

- AC Voltmeter
- Alignment Tape: RR5-2SC PAL (Part No.8-960-035-61)

Real Time Counter (min.)	Tape Counter	Video Track	Audio Track
00:00 – 04:00	000 – 100	Monoscope	3 kHz, 0 dB
04:00 – 09:00	100 – 208	Color-bar	_____
09:00 – 14:00	208 – 300	R-F sweep	_____
14:00 – 16:00	300 – 335	Mod. 20T pulse	1 kHz, 0 dB
16:00 – 18:00	335 – 367	M.S. w/burst	10 kHz, – 10 dB
18:00 – 20:00	367 – 398	Pseudo C.B. for DOC adj.	_____

10-1. AUDIO HEAD POSITION ADJUSTMENT

Refer to Section 7-7.

10-2. AUDIO PLAYBACK FREQUENCY RESPONSE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> Play back the 1 kHz and 10 kHz segments of the alignment tape RR5-2SC PAL. 	<p>LINE OUT connector (terminated by 47 kΩ)</p> <p>1 kHz level = Reference level</p> <p>10 kHz level = Reference level - 10 \pm 1 dB</p> <p>Adjust both CH-1 and CH-2.</p>	<p>CH-1: \odotRV901/VA-57A (I-7)</p> <p>CH-2: \odotRV902/VA-57A (H-7)</p>

10-3. AUDIO PLAYBACK OUTPUT LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> Play back the 1 kHz segment of the alignment tape RR5-2SC PAL. 	<p>LINE OUT connector (terminated by 47 kΩ)</p> <p>-5 \pm 0.5 dBS</p> <p>Adjust both CH-1 and CH-2.</p>	<p>CH-1: \odotRV903/VA-57A (I-7)</p> <p>CH-2: \odotRV904/VA-57A (H-7)</p>

SECTION 11

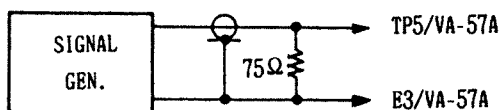
VIDEO SYSTEM ALIGNMENT

(Equipment Required)

- Dual-trace Oscilloscope
- Frequency Counter
- Video Sweep Signal Generator
- DC Voltmeter
- Alignment Tape: RR5-2SC PAL (Part No.8-960-035-61)

Real Time Counter (min.)	Tape Counter	Video Track	Audio Track
00:00 - 04:00	000 - 100	Monoscope	3 kHz, 0 dB
04:00 - 09:00	100 - 208	Color-bar	_____
09:00 - 14:00	208 - 300	R-F sweep	_____
14:00 - 16:00	300 - 335	Mod. 20T pulse	1 kHz, 0 dB
16:00 - 18:00	335 - 367	M.S. w/burst	10 kHz, - 10 dB
18:00 - 20:00	367 - 398	Pseudo C.B. for DOC adj.	_____

11-1. NOISE CANCELLER ADJUSTMENT

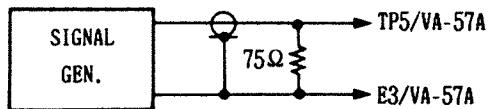


Locked sweep

Marker: 1/1.14/2/3/4.43/5.5 MHz

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • Unsolder and open SLIT 1/VA-57A. • Connect a signal generator to TP5 and E3/VA-57A. 	<p>TP5/VA-57A (F-8)</p> <p>A timing diagram showing a series of pulses. The pulses are labeled 1, 2, 3, 4.43, and 5.5. The vertical scale is 50 mVp-p.</p>	<p>Level control/ SIGNAL GEN.</p>
<ul style="list-style-type: none"> • Short between CN2-1 and E3/VA-57A with a shorting clip. • Short between TP11 and E6/VA-57A with a shorting clip. • VIDEO OUT connector: terminated by 75Ω • After the adjustment is completed, remove the shorting clips. Then solder and short SLIT 1/ VA-57A. 	<p>TP6/VA-57A (B-10)</p> <p>Minimize the level of A (2 MHz).</p> <p>A timing diagram showing a signal waveform. A vertical line is labeled A.</p>	<p>RV8/VA-57A (E-9)</p> <p>TRIG: TRIG OUT/SIGNAL GEN.</p>

11-2. HIGH COMPONENT MIX ADJUSTMENT

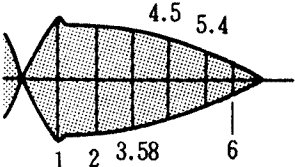




Locked sweep

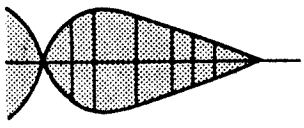
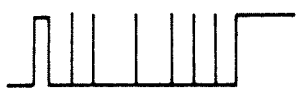
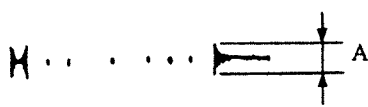
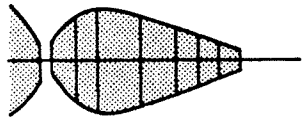

Marker: 1/1.4/2/3/4.43/5.5 MHz

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • Unsolder and open SLIT 1/VA-57A. • Connect a signal generator to TP5 and E3/VA-57A. 	<p>TP5/VA-57A (F-8)</p> <p>A waveform diagram showing a series of five rectangular pulses. Above the pulses are labels: 1, 2, 3, 4.43, and 5.5. To the right of the pulses, a vertical double-headed arrow indicates the peak-to-peak amplitude as "350 mVp-p".</p>	<p>● Level control/ SIGNAL GEN.</p>
<ul style="list-style-type: none"> • Short between CN2-1 and E3/VA-57A with a shorting clip. • Short between TP11 and E6/VA-57A with a shorting clip. • VIDEO OUT connector: terminated by 75Ω • After the adjustment is completed, remove the shorting clips. Then solder and short SLIT 1/ VA-57A. 	<p>TP6/VA-57A (B-10)</p> <p>A waveform diagram showing a single rectangular pulse. Above the pulse are labels: 0.5 and 1.</p> <p>0.2 MHz level = Reference 0.5 MHz level = Reference + 10% - 0 %</p>	<p>● RV7/VA-57A (E-10)</p> <p>TRIG: TRIG OUT/SIGNAL GEN.</p>

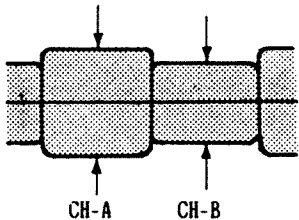
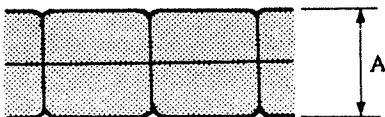
11-3. RF FREQUENCY RESPONSE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments															
<ul style="list-style-type: none">• Play back the RF sweep segment of the alignment tape RR5-2SC PAL.• Short between TP8 and E3/SV-93D with a shorting clip.• After the adjustment is completed, remove the shorting clip.	<p>TP1/VA-57A (E-3)</p>  <table><tr><th>2MHz</th><th>3.58MHz</th><th>4.5MHz</th><th>5.4MHz</th><th>6MHz</th></tr><tr><td>103</td><td>108</td><td>100%</td><td>80</td><td>68</td></tr><tr><td>±20%</td><td>±15%</td><td>reference</td><td>±10%</td><td>±15%</td></tr></table>	2MHz	3.58MHz	4.5MHz	5.4MHz	6MHz	103	108	100%	80	68	±20%	±15%	reference	±10%	±15%	<p>CH-A: ⦿RV1/VA-57A (G-3)</p> <p>CH-B: ⦿RV2/VA-57A (G-2)</p> <p>TRIG: TP2/VA-57A (V)</p> <p>CH-A </p> <p>CH-B </p>
2MHz	3.58MHz	4.5MHz	5.4MHz	6MHz													
103	108	100%	80	68													
±20%	±15%	reference	±10%	±15%													

11-4. DROPOUT COMPENSATION SENSITIVITY ADJUSTMENT

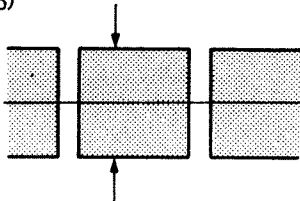
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • Short between TP8 and E3/SV-93D with a shorting clip. • Play back the RF sweep segment of the alignment tape RR5-2SC PAL. • Set the TRACKING control to the center click position. • Oscilloscope: CHOP mode → ADD mode • After the adjustment is completed, remove the shorting clip. 	<p>TP1/VA-57A(E-3)</p>  <p>TP3/VA-57A(H-4)</p>  <p>ADD mode</p>   <p>$A = 20 \sim 25 \text{ mV}$</p>	<p>RV5/VA-57A(I-4)</p> <p>TRIG: TP2/VA-57A(V)</p>

11-5. RF BALANCE/LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> Play back the color bar segment of the alignment tape RR5-2SC PAL. Adjust the TRACKING control so that the RF level is maximized at TP1/VA-57A. 	TP1/VA-57A(E-3)  CH-A level = CH-B level	RV3/VA-57A(F-3) TRIG: TP2/VA-57A(V)
	TP1/VA-57A(E-3)  $A = 220 \pm 20 \text{ mV}$	RV4/VA-57A(F-3) TRIG: TP2/VA-57A(V)

11-6. CHROMA DEMODULATOR ADJUSTMENT

11-6-1. ACC Level Preset

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> Play back the color bar segment of the alignment tape RR5-2SC PAL. 	TP10/VA-57A(A-3)  $0.8 \pm 0.1 \text{ V}$	RV10/VA-57A(C-3) TRIG: TP2/VA-57A(V)

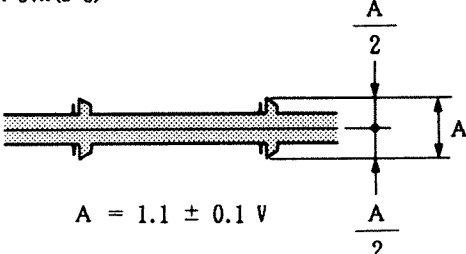
11-6-2. Reference 4.43 MHz Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • Insert the alignment tape. • Stop mode. • Three or more minutes should elapse after POWER ON. • COLOR LOCK sw: center. 	TP15/VA-57A(C-7) $4,433,632 \pm 5 \text{ Hz}$	\odot CV1/VA-57A(A-8)

11-6-3. VCO DC Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • Play back the color bar segment of the alignment tape RR5-2SC PAL. • COLOR LOCK sw: center 	TP9/VA-57A(B-3) $8.1 \pm 0.1 \text{ Vdc}$	\odot RV9/VA-57A(B-5)

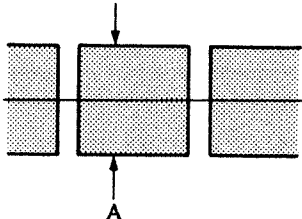
11-6-4. APC Gain Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • Play back the color bar segment of the alignment tape RR5-2SC PAL. • Short between TP8 and E5/VA-57A with a shorting clip. • After the adjustment is completed, remove the shorting clip. 	TP17/VA-57A(B-3)  $A = 1.1 \pm 0.1 \text{ V}$	\odot RV13/VA-57A(B-2) TRIG: INT

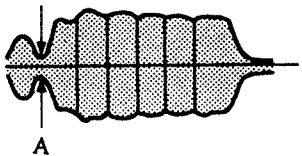
11-6-5. 5.12 MHz Tuning Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • Play back the color bar segment of the alignment tape RR5-2SC PAL. 	TP16/VA-57A(D-6) $5.12 \text{ MHz} \pm 1000 \text{ Hz}$ (Level $\geq 1.0 \text{ Vp-p}$)	\odot LV2/VA-57A (C-7) \odot LV3/VA-57A (D-6)

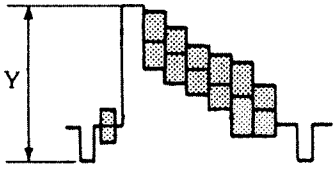
11-6-6. ACC Level Adjustment

machine conditions for adjustment	specifications	adjustments
Step.1 • Play back the color bar segment of the alignment tape RR5-2SC PAL.	TP10/VA-57A(A-3) Minimize the level.	⊗LV1/VA-57A(B-2)
Step.2 • Play back the color bar segment of the alignment tape RR5-2SC PAL.	TP10/VA-57A(A-3)  $A = 0.8 \pm 0.05 \text{ V}$	⊗RV10/VA-57A(C-3) TRIG: TP2/VA-57A(V)

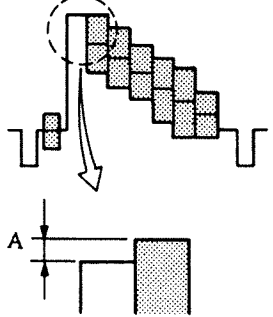
11-6-7. Converter Balance Adjustment

machine conditions for adjustment	specifications	adjustments
• Play back the color bar segment of the alignment tape RR5-2SC PAL.	TP10/VA-57A(A-3)  Minimize the A level. $(A \leq 50 \text{ mV})$	⊗RV11/VA-57A(D-4) TRIG: INT(H)

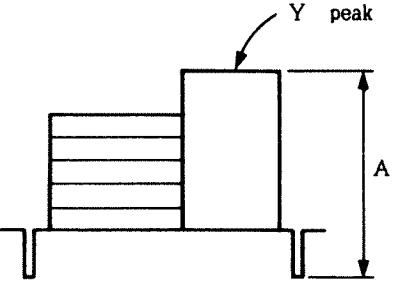
11-6-8. Y Output Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> Play back the color bar segment of the alignment tape RR5-2SC PAL. VIDEO OUT connector: terminated by 75Ω 	<p>TP6/VA-57A(B-10)</p>  <p>Y level = 1.0 ± 0.05 V</p>	<p>RV6/VA-57A(E-6)</p> <p>TRIG: INT(TV-H)</p>

11-6-9. Chroma Mix Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> Play back the color bar segment of the alignment tape RR5-2SC PAL. 	<p>TP6/VA-57A(B-10)</p>  <p>A = 0</p>	<p>RV12/VA-57A(A-4)</p> <p>TRIG: INT(TV-H)</p>

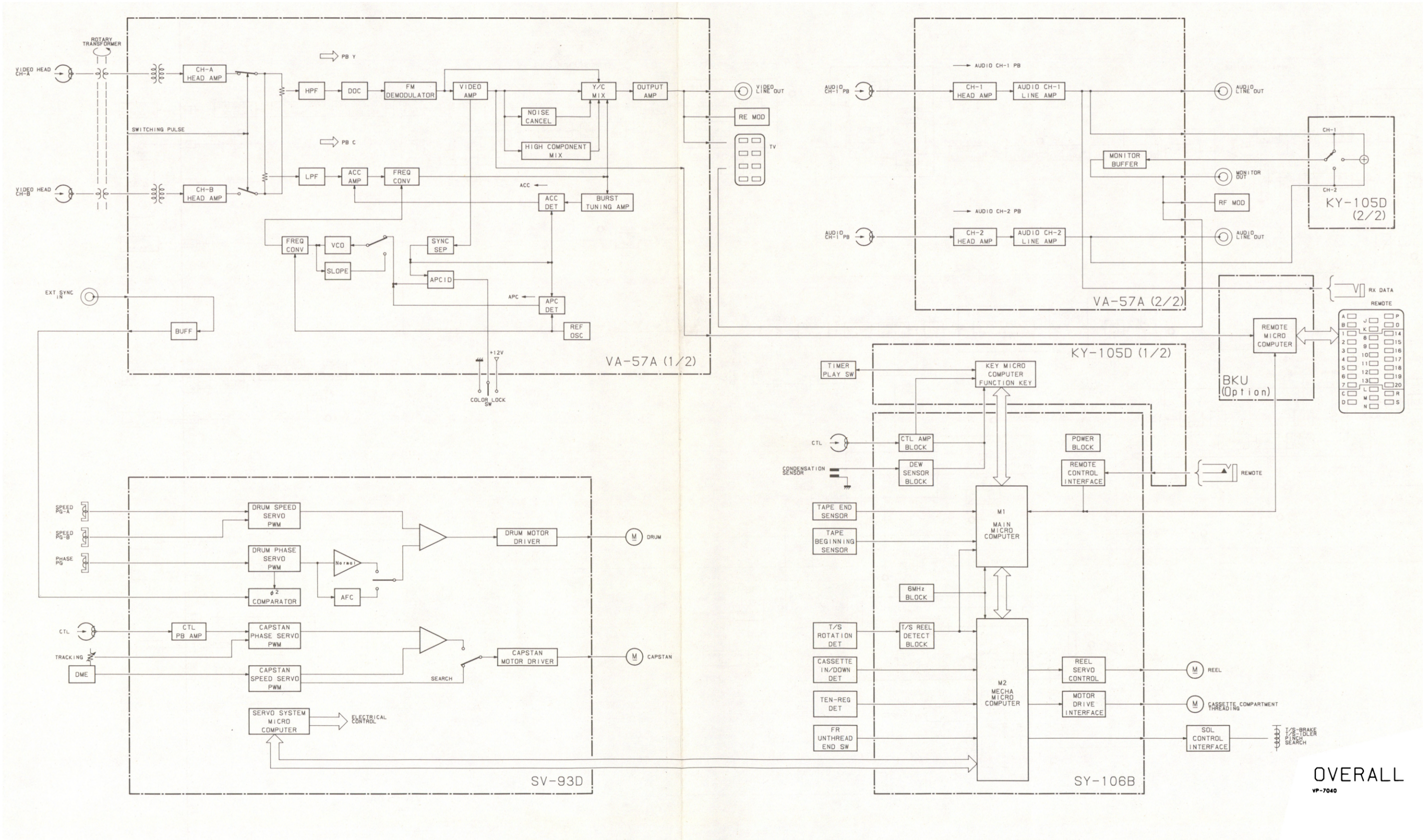
11-6-10. Video Level Adjustment for BKU-701

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> Play back the color bar segment of the alignment tape RR5-2SC PAL. 	<p>TP501/VA-57A(E-4)</p>  <p>A = 0.7 ± 0.05 Vp-p</p>	<p>RV501/VA-57A(D-8)</p> <p>TRIG: INT</p>

SECTION 12
BLOCK DIAGRAM

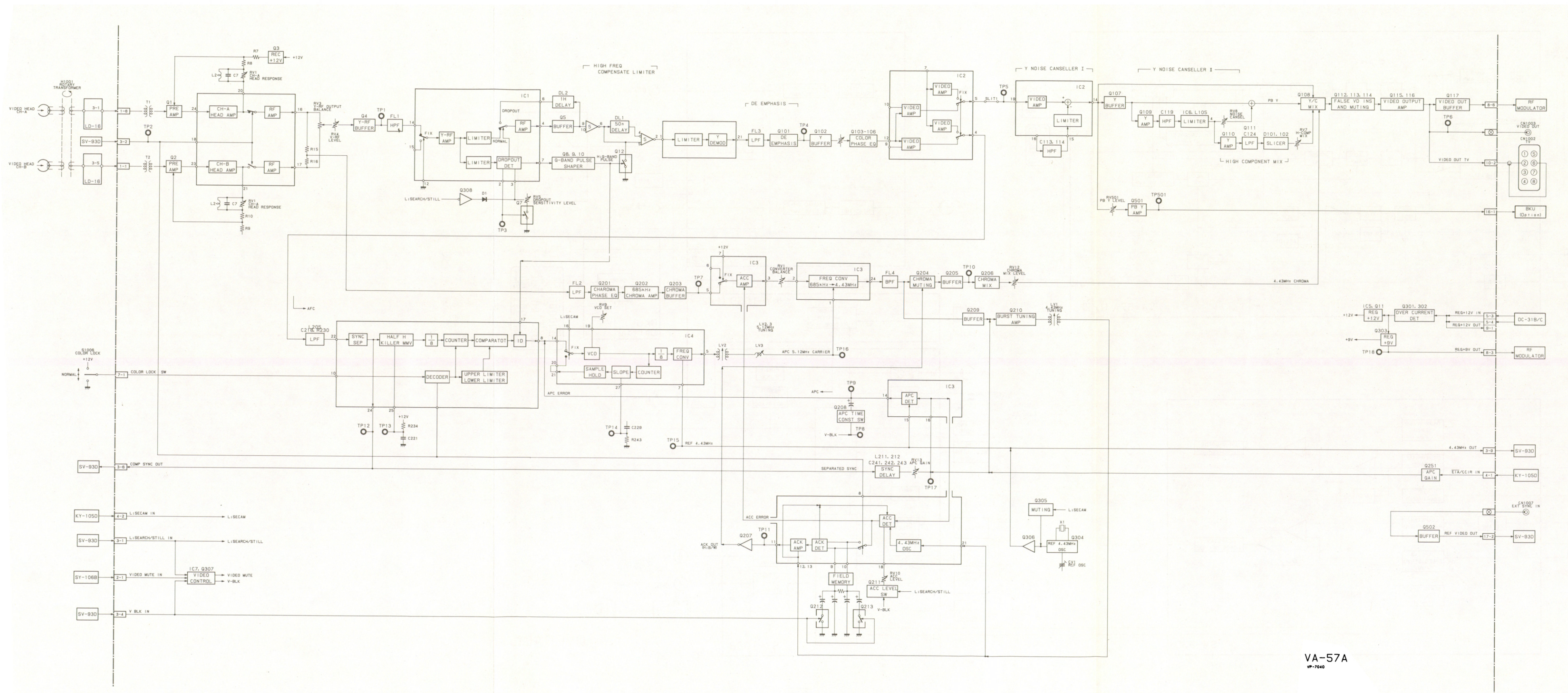
OVERALL

OVERALL
BLOCK DIAGRAM

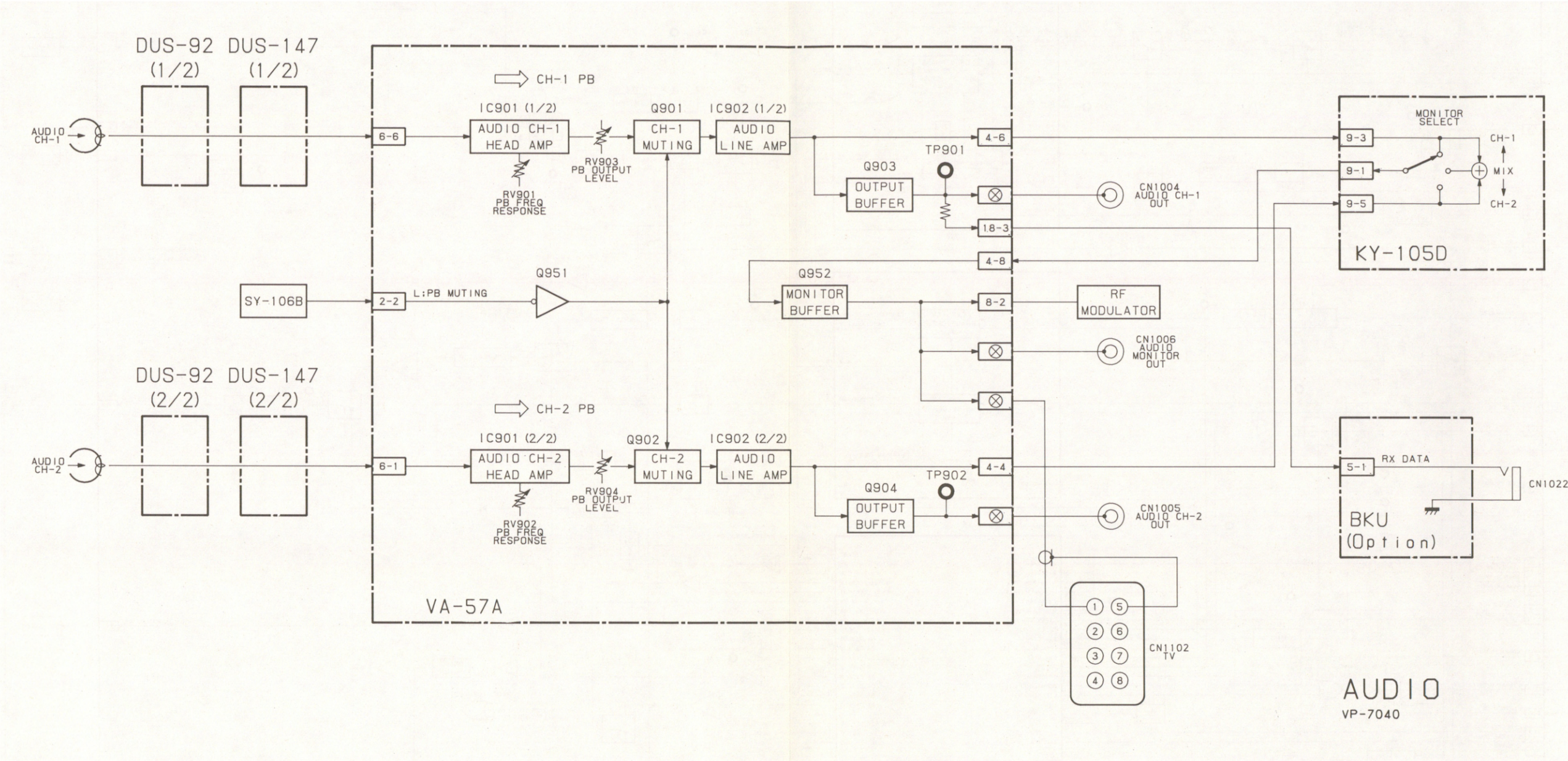


OVERALL
VP-7040

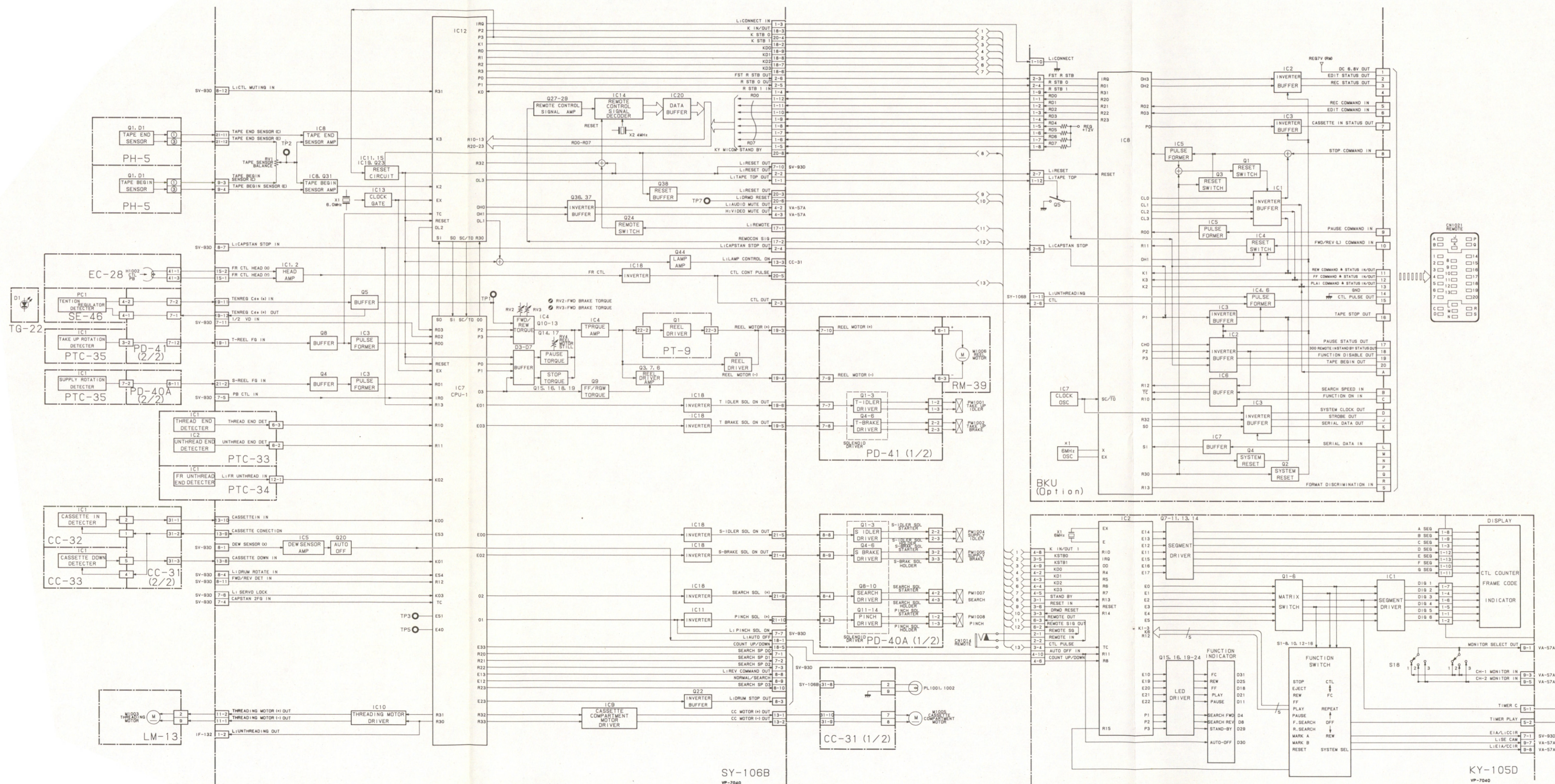
VIDEO VIDEO



AUDIO SYSTEM
BLOCK DIAGRAM



SYSTEM CONTROL BLOCK DIAGRAM



SECTION 13

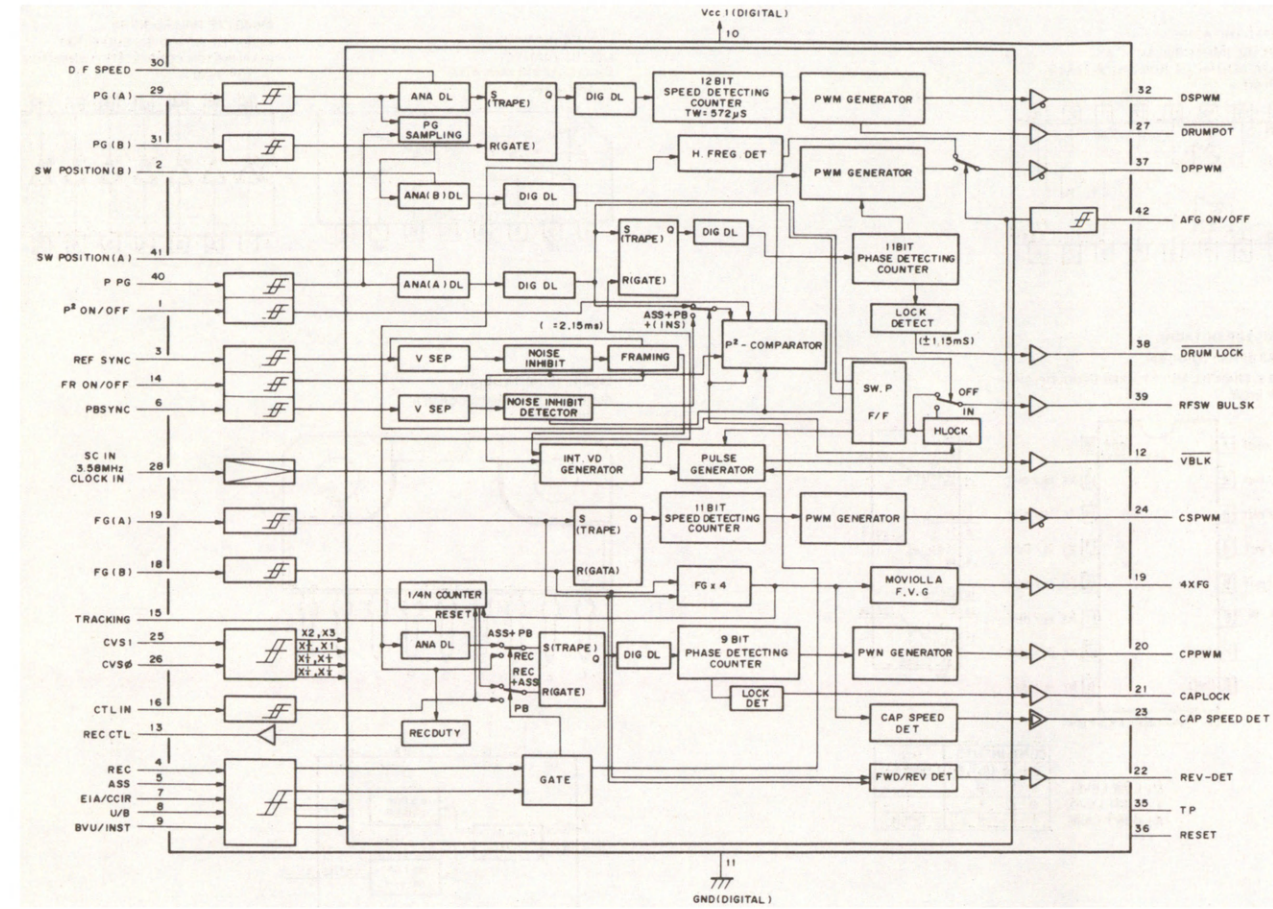
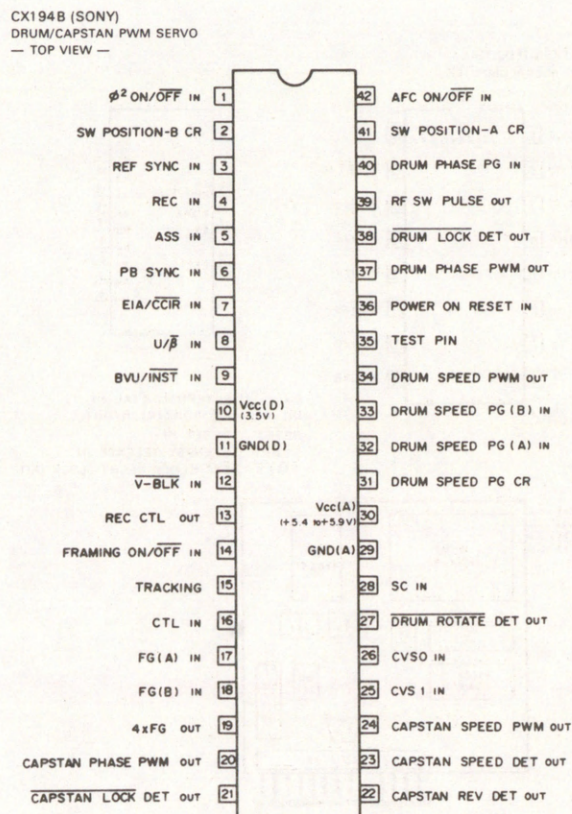
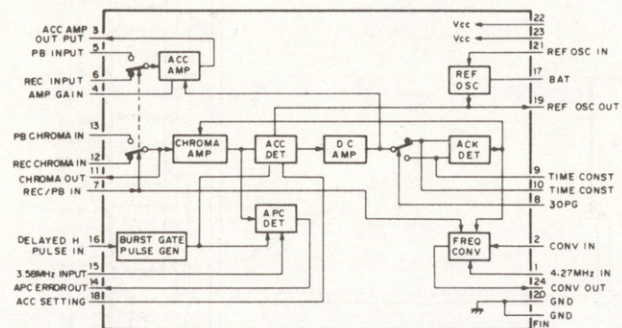
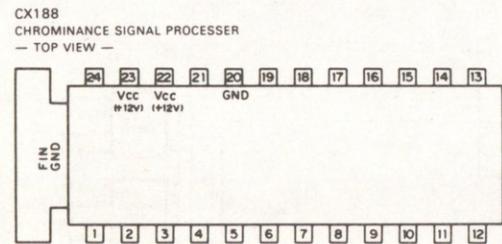
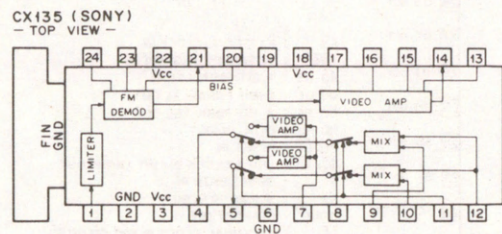
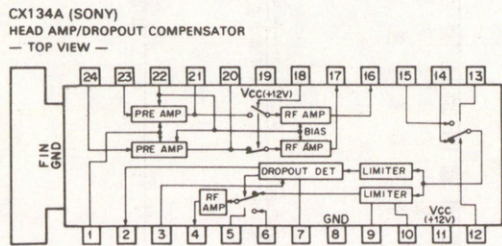
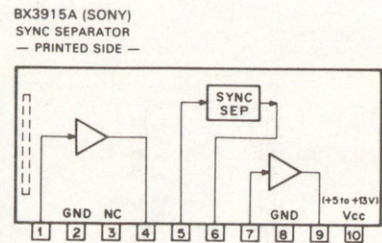
SEMICONDUCTOR ELECTRODES

ICs, transistors and diodes whoses functions are equivalent are described here. Therefore, incompatible device names may be described together. For parts replacement, refer to the Spare Parts section in this manual.

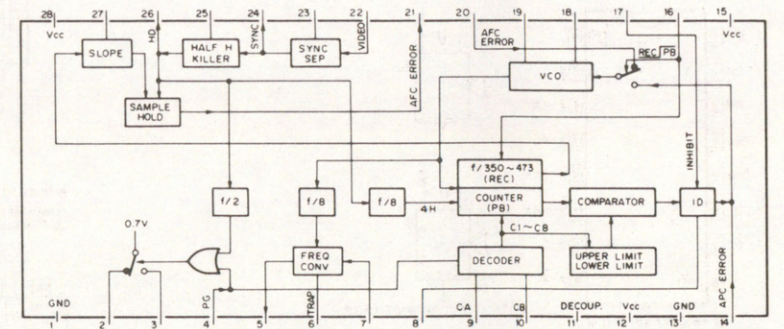
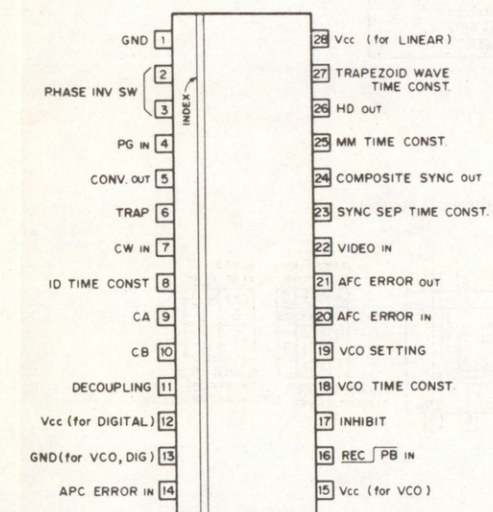
IC	PAGE	IC	PAGE	TRANSISTOR	PAGE
BX3915A	13-3	NJM2903D	13-7	2SA768	13-9
CX134A	13-3	NJM4558D	13-8	2SA771	13-9
CX135	13-3	NJM4558D-D	13-8	2SA933	13-9
CX188	13-3	NJM4558S	13-8	2SA1048	13-9
CX194B	13-3			2SA1115	13-9
CX859	13-4	SN74HC244N	13-7	2SA1175	13-9
				2SA1175F	13-9
HD10116	13-5	TA7060AP	13-8	2SB733	13-9
HD14053BP	13-5	TC40H000P	13-8		
		TC74HC244P	13-7	2SC1740	13-9
LA3160	13-5	TC4001BP	13-8	2SC1740S	13-9
LA3161	13-5	TC4001UBP	13-8	2SC1826	13-9
		TC4030BP	13-8	2SC2458	13-9
M54517P	13-5	TC4053BPHB	13-5	2SC2603	13-9
M54543L	13-5	TC4069UBP	13-8	2SC2603G	13-9
		TC4538BP	13-5	2SC2785E	13-9
MB84013B	13-5	TC504013BP	13-8	2SC2785F	13-9
MB88201-173N	13-6			2SC2785K	13-9
MB88505P	13-6	μPC324C	13-8	2SC2878	13-9
MB88505PF	13-7	μPC339C	13-8	2SC3068	13-9
MB88525P	13-7	μPC358C	13-8	2SC403SP	13-9
		μPC393C	13-7		
MC10116L	13-5	μPC4558C	13-8	2SD774	13-9
MC74HC244N	13-7			2SD894	13-9
				2SD998	13-9
				2SD1111	13-9
				2SD1682	13-9
				2SK152	13-9
				2SK523	13-9
				DTA124XS	13-9
				DTA144ES	13-9

The circuit diagram of each IC is obtained from the IC data book published by the manufacturer.

DIODE	PAGE
IOE-2	13-10
ISS119	13-10
ISS133	13-10
ISS148	13-10
BR5104S:RED	13-10
ERB12-??	13-10
GL-5HD5:RED	13-10
GP-1L52	13-10
GP-1L53	13-10
RD77EB?	13-10
SIB01-02	13-10
SPS102	13-10
TLUG154:GREEN	13-10
TLUY154:YELLOW	13-10
TLY255:YELLOW	13-10
U05E	13-10



CX859 (SONY)
— TOP VIEW —



AFC/APC PRESET DATA

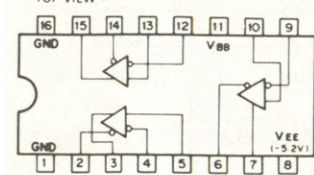
	AFC COUNT DOWN	APC ID COUNT	
		UPPER LIM	LOWER LIM
C1	f/473	105	95
C2	f/351	129	119
C3	f/353	137	127
C4	f/351	118	104
C5	f/351	131	117
C6	f/351	144	130
C7	f/350	136	104
C8	—	125	115

DECODER TRUTH TABLE

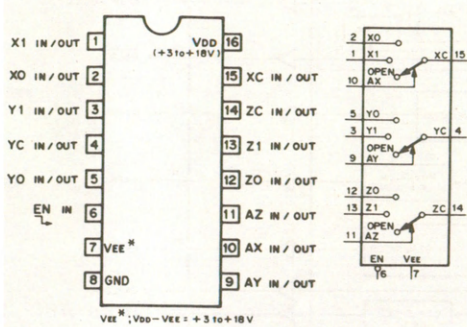
CA	CB	LOW	OPEN	HIGH
LOW	C1	C7	—	—
OPEN	C4	C5	C6	—
HIGH	—	*C2	C3	C8

* PG: L... C2
PG: H... C3

HD10116 (HITACHI)
MC10116L (MOTOROLA)
ECL DIFFERENTIAL OR NOR LINE RECEIVER
— TOP VIEW —



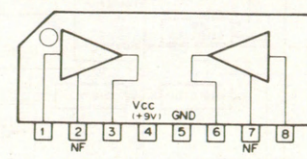
HD14053 BP (HITACHI)
TC4053 BPHB (TOSHIBA)
C-MOS 2-CHANNEL MULTIPLEXER/DEMULTIPLEXER
— TOP VIEW —



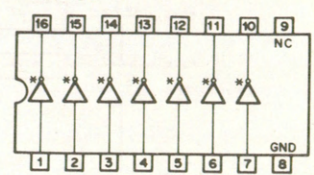
CONT. INPUTS	ON CHANNEL
EN A (X,Y,Z)	
0	0
1	1
X	OPEN

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE.

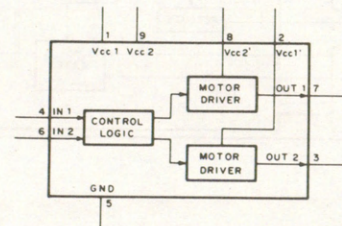
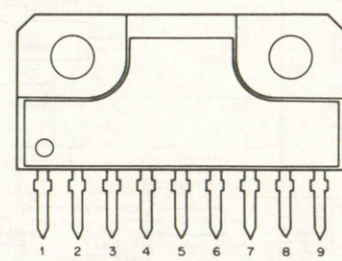
LA3160 (SANYO)
LA3161 (SANYO)
2-CHANNEL PREAMPLIFIER
— SIDE VIEW —



M54517P (MITSUBISHI)
INVERTER WITH OPEN-COLLECTOR
(DARLINGTON-CONNECTED TRANSISTOR ARRAY)
— TOP VIEW —



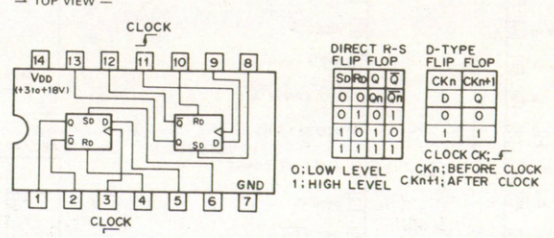
M54543L (MITSUBISHI)
BI-DIRECTIONAL MOTOR DRIVER
— SIDE VIEW —



IN	OUT	MODE
1 2 1 2		
0 0 2 2	Z Z	NO OPERATION
1 0 1 0		ROTATION
0 1 0 1		REVERSE ROTATION
1 1 0 0		BRAKE

0: LOW LEVEL
1: HIGH LEVEL
Z: HIGH IMPEDANCE

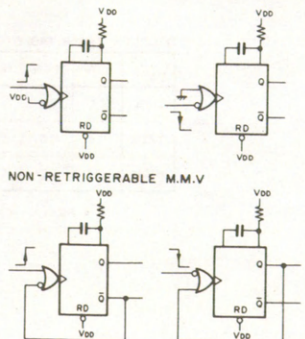
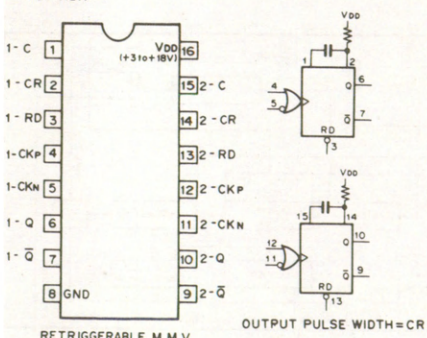
MB84013B (FUJITSU)
C-MOS D-TYPE FLIP-FLOP WITH DIRECT SET/RESET
— TOP VIEW —



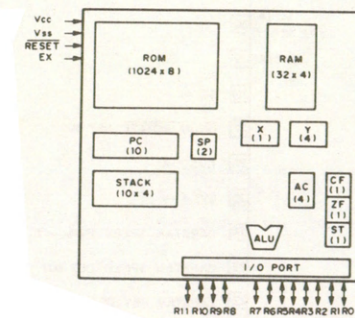
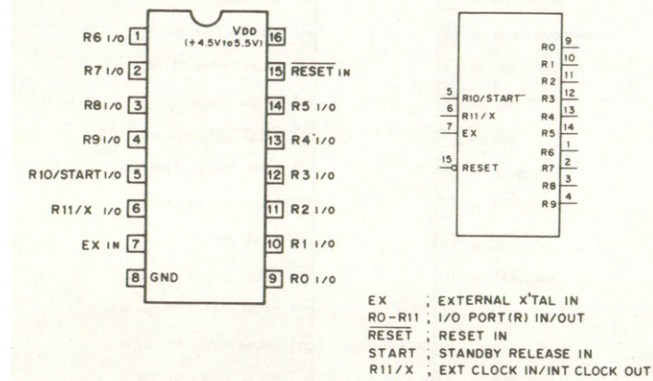
DIRECT R-S FLIP FLOP	D-TYPE FLIP FLOP
0 0 0 0	CKn CKn+1
0 0 0 1	D Q
0 1 0 1	0 0
1 0 1 0	1 1
1 1 1 1	1 1

0: LOW LEVEL
1: HIGH LEVEL
CKn: BEFORE CLOCK
CKn+1: AFTER CLOCK

TC4538BP (TOSHIBA)
C-MOS DUAL RETRIGGERABLE/NON-RETRIGGERABLE
MONOSTABLE MULTIVIBRATOR
— TOP VIEW —

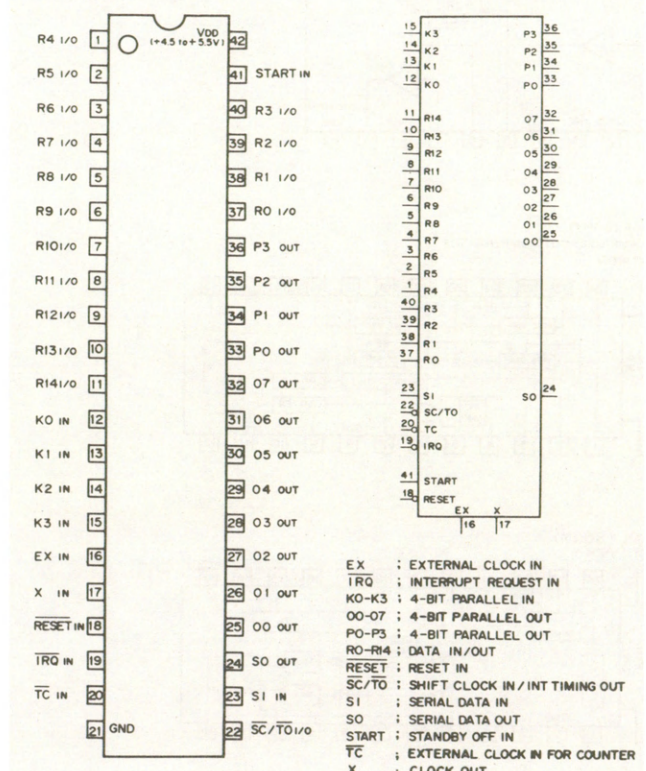


MB88201-173N (FUJITSU)
C-MOS 4-BIT MICROCOMPUTER
— TOP VIEW —

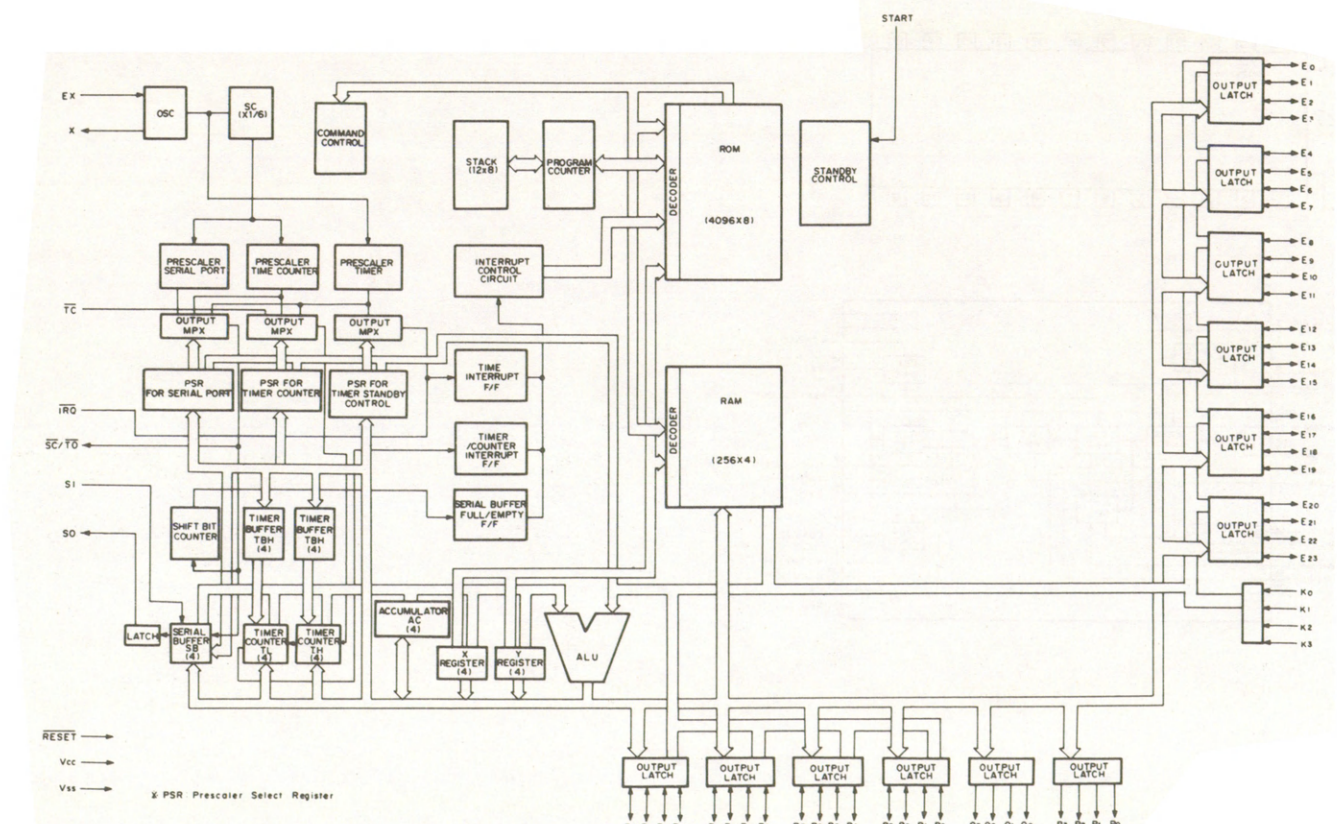


EX : EXTERNAL X'TAL IN
RO-R11 : I/O PORT(R) IN/OUT
RESET : RESET IN
START : STANDBY RELEASE IN
R11/X : EXT CLOCK IN/INT CLOCK OUT

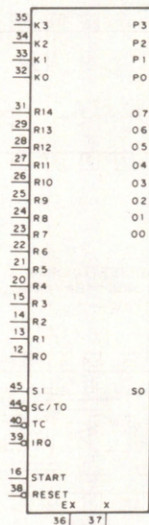
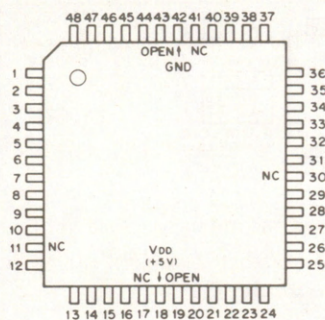
MB88505P (FUJITSU)
C-MOS 4-BIT ONE-CHIP MICROCOMPUTER
— TOP VIEW —



EX : EXTERNAL CLOCK IN
IRQ : INTERRUPT REQUEST IN
K0-K3 : 4-BIT PARALLEL IN
O0-O7 : 4-BIT PARALLEL OUT
P0-P3 : 4-BIT PARALLEL OUT
R0-R14 : DATA IN/OUT
RESET : RESET IN
SC/TO : SHIFT CLOCK IN/INT TIMING OUT
S1 : SERIAL DATA IN
S0 : SERIAL DATA OUT
START : STANDBY OFF IN
TC : EXTERNAL CLOCK IN FOR COUNTER
X : CLOCK OUT

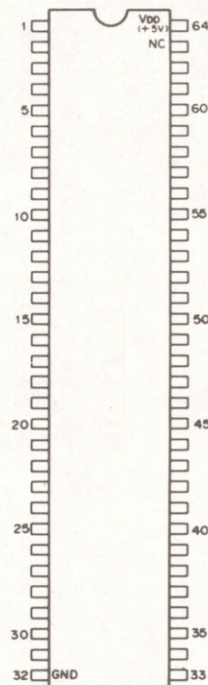


MB88505PF (FUJITSU) FLAT PACKAGE
C-MOS 4-BIT ONE-CHIP MICROCOMPUTER
— TOP VIEW —



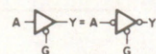
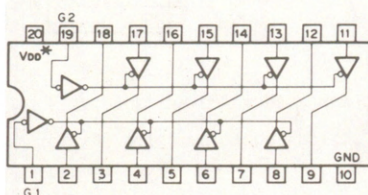
EX : EXTERNAL CLOCK IN
IRQ : INTERRUPT REQUEST IN
K0-K3 : 4-BIT PARALLEL IN
O0-O7 : 4-BIT PARALLEL OUT
P0-P3 : 4-BIT PARALLEL OUT
R0-R14 : DATA IN/OUT
RESET : RESET IN
SC/TO : SHIFT CLOCK IN/INT TIMING OUT
S1 : SERIAL DATA IN
S0 : SERIAL DATA OUT
START : STANDBY OFF IN
TC : EXTERNAL CLOCK IN FOR COUNTER
X : CLOCK OUT

MB88525P (FUJITSU)
C-MOS 4-BIT ONE-CHIP MICROCOMPUTER
— TOP VIEW —



PN	IN	OUT	SYMBOL	PN	IN	OUT	SYMBOL
1	O	O	R0	33	O	O	S0
2	O	O	R1	34	O	O	E0
3	O	O	R2	35	O	O	E1
4	O	O	R3	36	O	O	E2
5	O	O	R4	37	O	O	E3
6	O	O	R5	38	O	O	E4
7	O	O	R6	39	O	O	E5
8	O	O	R7	40	O	O	E6
9	O	O	R8	41	O	O	E7
10	O	O	R9	42	O	O	E8
11	O	O	R10	43	O	O	E9
12	O	O	R11	44	O	O	E10
13	O	O	R12	45	O	O	E11
14	O	O	R13	46	O	O	E12
15	O	O	R14	47	O	O	E13
16	O	O	R15	48	O	O	E14
17	O	O	K0	49	O	O	E15
18	O	O	K1	50	O	O	E16
19	O	O	K2	51	O	O	E17
20	O	O	K3	52	O	O	E18
21	O	O	O0	53	O	O	E19
22	O	O	O1	54	O	O	E20
23	O	O	O2	55	O	O	E21
24	O	O	O3	56	O	O	E22
25	O	O	EX	57	O	O	E23
26	O	O	X	58	O	O	P0
27	O	O	RESET	59	O	O	P1
28	O	O	IRQ	60	O	O	P2
29	O	O	TC	61	O	O	P3
30	O	O	SC/TO	62	O	O	START
31	O	O	S1	63	O	O	—
32	O	O	GND	64	O	O	VDD

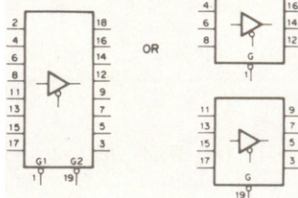
MC74HC244N (MOTOROLA)
SN74HC244N (TI)
TC74HC244P (TOSHIBA)
C-MOS BUS BUFFER WITH 3-STATE OUTPUT
— TOP VIEW —



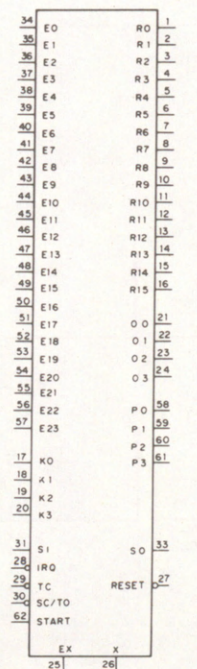
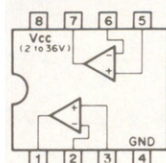
G	A	Y
0	0	0
0	1	1
1	X	HI-Z

0: LOW LEVEL
1: HIGH LEVEL
X: DONT CARE
HI-Z: HIGH IMPEDANCE

* VDD : +2 to +6V
HCT: +5V

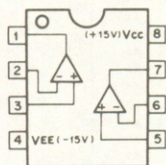


NJM2903D (JRC)
uPC393C (NEC)
VOLTAGE COMPARATOR
— TOP VIEW —

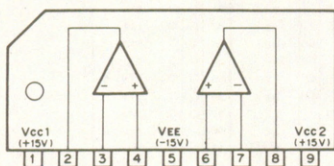


E0-E23 : I/O PORT (E) IN/OUT
EX : EXTERNAL CLOCK IN
IRQ : EXTERNAL INTERRUPT REQUEST IN
K0-K3 : INPUT PORT (K) IN
O0-O3 : OUTPUT PORT (O) OUT
P0-P3 : OUTPUT PORT (P) OUT
R0-R15 : I/O PORT (R) IN/OUT
RESET : RESET IN
SC/TO : SHIFT CLOCK IN/TIMING OUT
S1 : SERIAL DATA IN
START : STANDBY RELEASE IN
S0 : SERIAL DATA OUT
TC : EXTERNAL CLOCK IN
X : CLOCK OUT

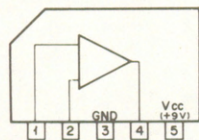
NJM4558D (JRC)
NJM4558D-D (JRC)
uPC4558C (NEC)
OPERATIONAL AMPLIFIER
— TOP VIEW —



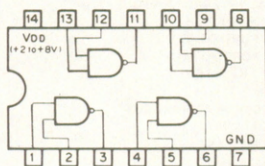
NJM4558S (JRC)
HIGH PERFORMANCE DUAL OPERATIONAL AMPLIFIER
— SIDE VIEW —



TA7060AP (TOSHIBA)
LINEAR AMP
— SIDE VIEW —



TC40H000P (TOSHIBA)
C-MOS 2-INPUT NAND GATE
— TOP VIEW —



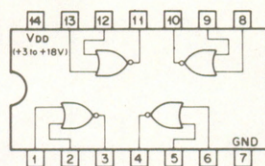
$$A \text{ --- } B \text{ --- } Y = A \cdot B$$

$$Y = \overline{A \cdot B} = \overline{A} + \overline{B}$$

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

0; LOW LEVEL
1; HIGH LEVEL

TC4001BP (TOSHIBA)
TC4001UBP (TOSHIBA)
C-MOS 2-INPUT NOR GATE
— TOP VIEW —



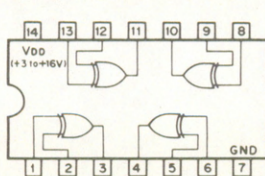
$$A \text{ --- } B \text{ --- } Y = \overline{A + B}$$

$$Y = \overline{A + B} = \overline{A} \cdot \overline{B}$$

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

0; LOW LEVEL
1; HIGH LEVEL

TC4030BP (TOSHIBA)
C-MOS EXCLUSIVE OR GATE
— TOP VIEW —



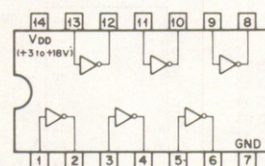
$$A \text{ --- } B \text{ --- } Y$$

$$Y = A \cdot B + A \cdot \overline{B}$$

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

0; LOW LEVEL
1; HIGH LEVEL

TC4069UBP (TOSHIBA)
C-MOS INVERTER
— TOP VIEW —

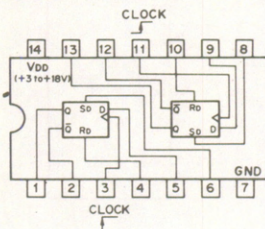


$$A \text{ --- } Y = \overline{A}$$

A	Y
0	1
1	0

0; LOW LEVEL
1; HIGH LEVEL

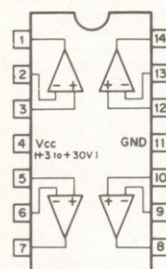
TC504013BP (TOSHIBA)
C-MOS D-TYPE FLIP FLOP WITH DIRECT SET/RESET
— TOP VIEW —



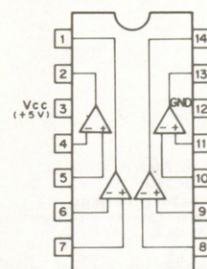
DIRECT R-S FLIP FLOP		D-TYPE FLIP FLOP	
S	R	D	Q
0	0	0	0
0	1	0	0
1	0	1	1
1	1	0	1

CLOCK CK; \overline{S}
CKn; BEFORE CLOCK
CKn+1; AFTER CLOCK
0; LOW LEVEL
1; HIGH LEVEL

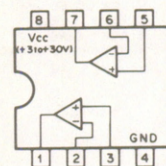
uPC324C (NEC)
QUAD. OP. AMPLIFIER
— TOP VIEW —

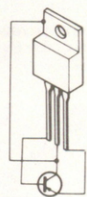


uPC339C (NEC)
COMPARATOR
— TOP VIEW —

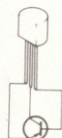


uPC358C (NEC)
DUAL OPERATIONAL AMPLIFIERS
— TOP VIEW —

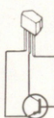




2SA768
2SA771



2SA933



2SA1048
2SA1115



TYPE NO.
PRINTED

2SA1175
2SA1175f



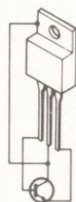
2SB733



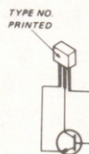
2SC1740
2SC2878
2SC3068



2SC1740S
2SC2458
2SC2603
2SC2603G
2SC403SP

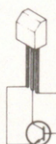


2SC1826

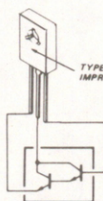


TYPE NO.
PRINTED

2SC2785E
2SC2785F
2SC2785K

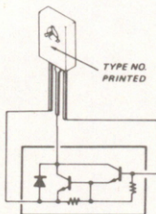


2SD774



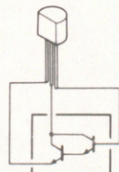
2SD894

TYPE NO.
IMPRINTED

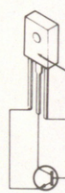


2SD998

TYPE NO.
PRINTED



2SD1111



2SD1682

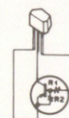
TYPE NO.
PRINTED



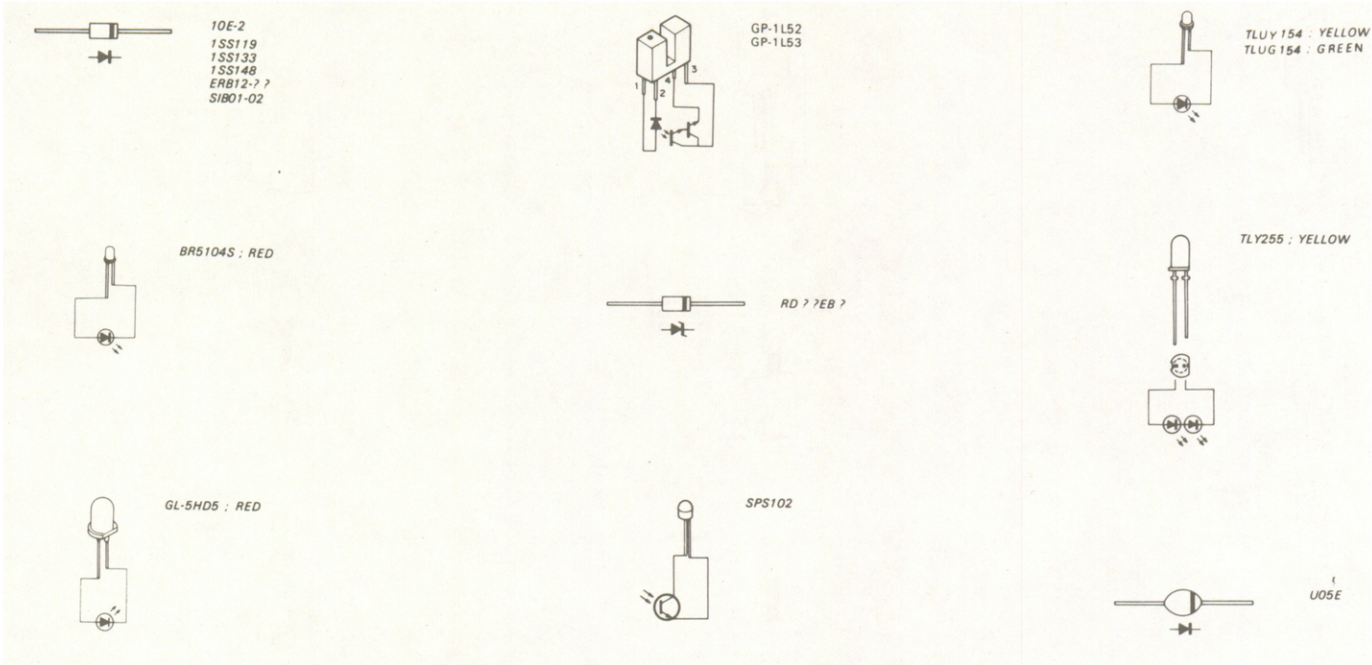
2SK152



2SK523



DTA124XS (R1=22K, R2=47K)
DTA144ES (R1=47K, R2=47K)



SECTION 14
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

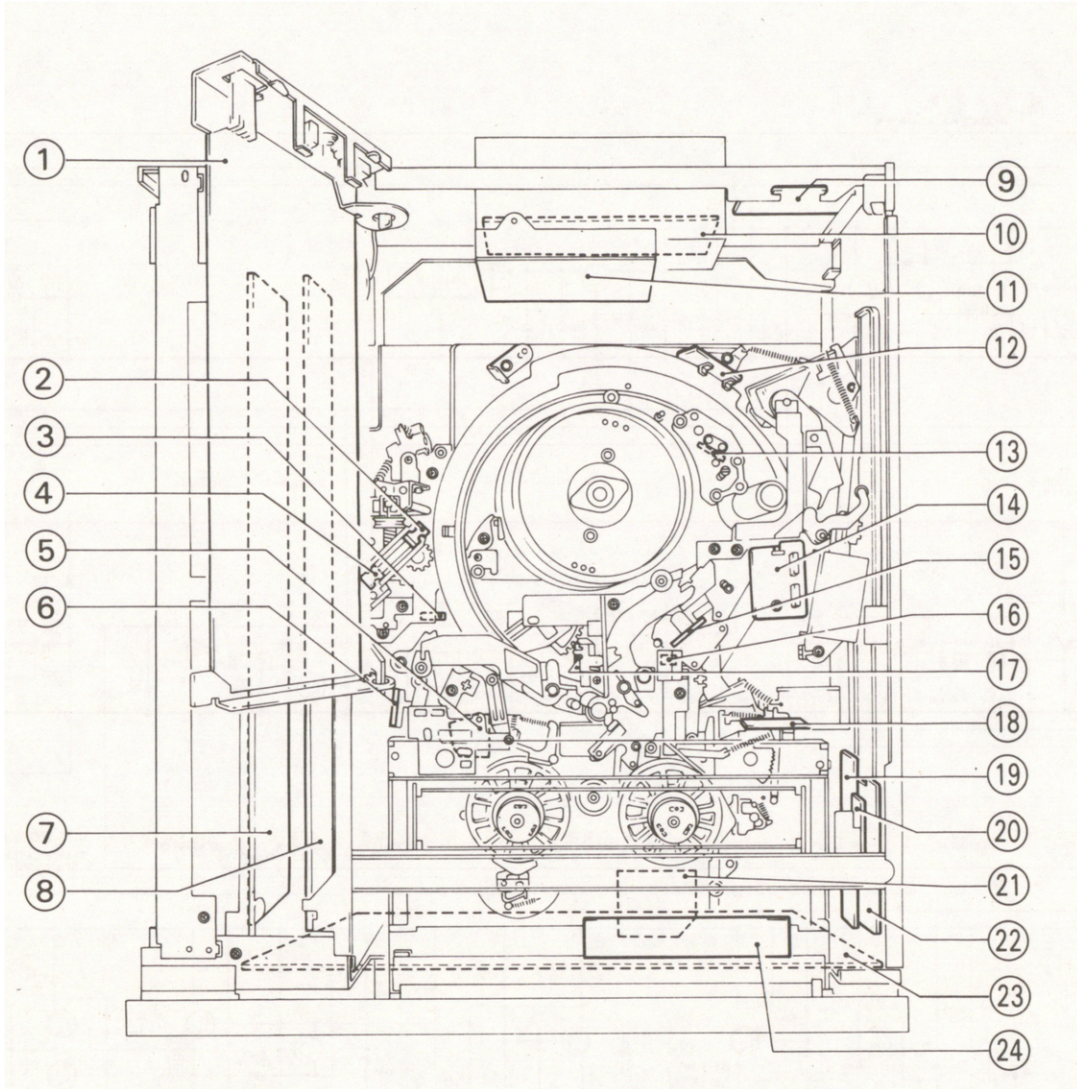
CIRCUIT FUNCTION OF THE PRINTED CIRCUIT BOARD

Circuit information is provided below.

SYSTEM	BOARD	CIRCUIT FUNCTION
VIDEO	VA-57A	Video Demodulator
AUDIO	DUS-92	Audio/CTL Head
	DUS-147	Audio/CTL Head
	VA-57A	Audio PB Amplifier
SERVO	EC-28	FR CTL Head
	DUS-92	Audio CTL Head
	DUS-147	Audio CTL Head
	PT-9 SV-93D	Reel Motor Driver Servo System
POWER	AC-65	AC Input (For UC)
	AC-89	AC Input (For EK)
	DC-31B	DC Supply (For UC)
	DC-31C	DC Supply (For EK)
	UR-14 UR-14E	Switching Regulator (For UC) Switching Regulator (For EK)
KEY	KY-105D	Function Key/Display
SYSTEM CONTROL	PD-40A	Plunger Solenoids
	PD-41	Plunger Solenoids
	PH-5	Tape Beginning/End Sensor
	SY-106B	System Control
OTHERS	CC-31	Cassette-up Compartment
	CC-32	Cassette In Detector
	CC-33	Cassette Down Detector
	LM-13	Threading Motor
	LP-41	Cassette Compartment Light

LOCATION

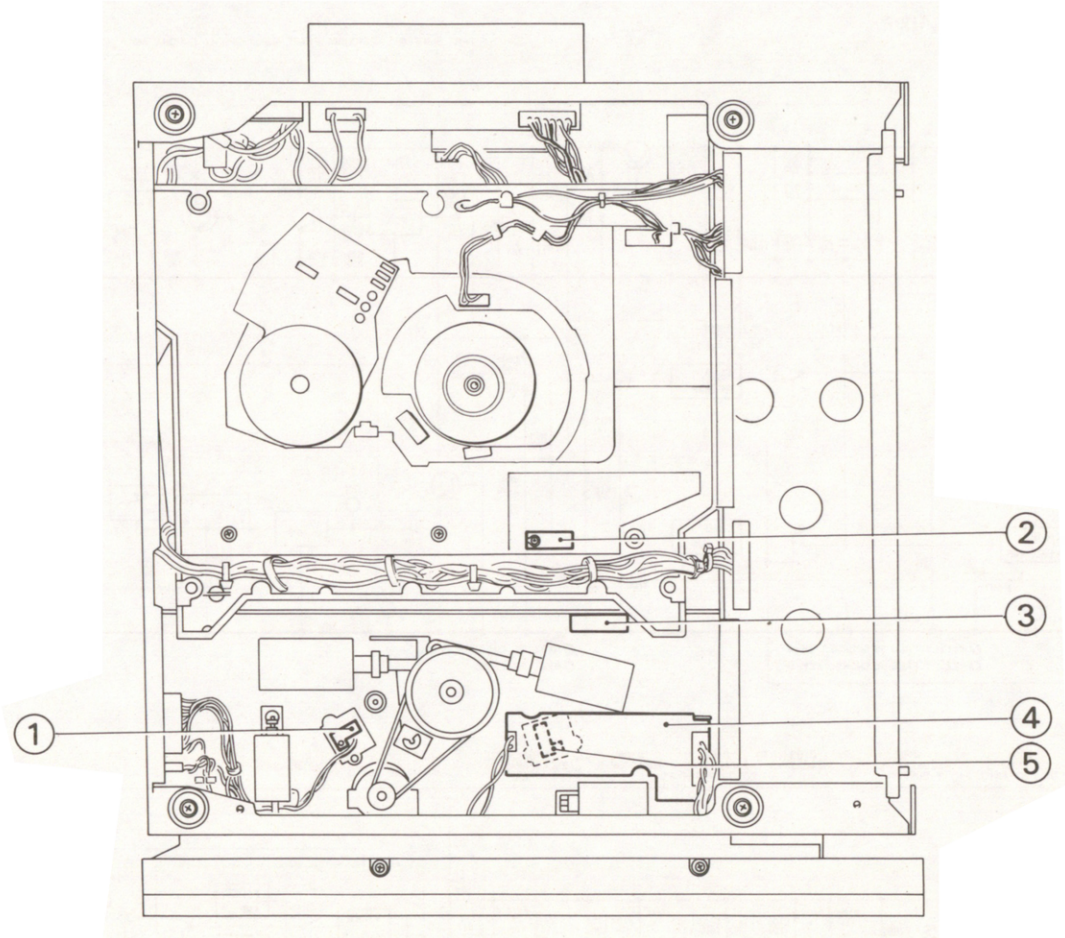
LOCATION OF THE PRINTED CIRCUIT BOARD
(TOP VIEW)



- | | |
|---|------------------|
| 1 VA-57A Board | 12 PTC-33 Board |
| 2 PH-5 Board | 13 DUS-92 Board |
| 3 LM-13 Board | 14 DUS-147 Board |
| 4 PH-5 Board | 15 EC-28 Board |
| 5 SE-46 Board | 16 PH-5 Board |
| 6 PTC-34 Board | 17 PH-5 Board |
| 7 SV-93D Board | 18 CC-33 Board |
| 8 SY-106B Board | 19 CC-32 Board |
| 9 AC-65 Board (For UC)
AC-89 Board (For EK) | 20 CC-31 Board |
| 10 UR-14 Board (For UC)
UR-14E Board (For EK) | 21 RM-39 Board |
| 11 DC-31B Board (For UC)
DC-31C Board (For EK) | 22 PD-40A Board |
| | 23 KY-105D Board |
| | 24 LP-41 Board |

LOCATION

(BOTTOM VIEW)

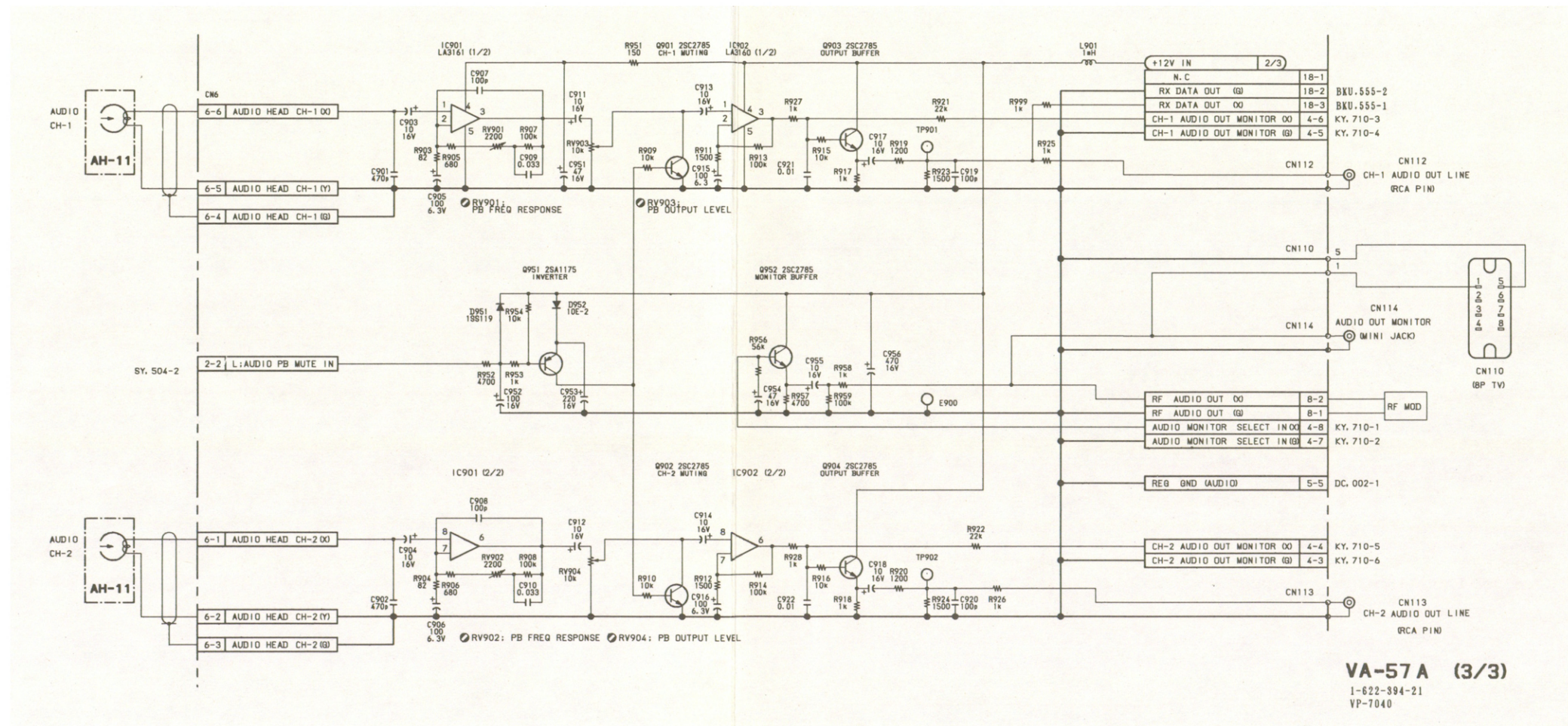


- | |
|----------------|
| 1 PTC-35 Board |
| 2 PT-9 Board |
| 3 TG-22 Board |
| 4 PD-41 Board |
| 5 PTC-35 Board |

14-14

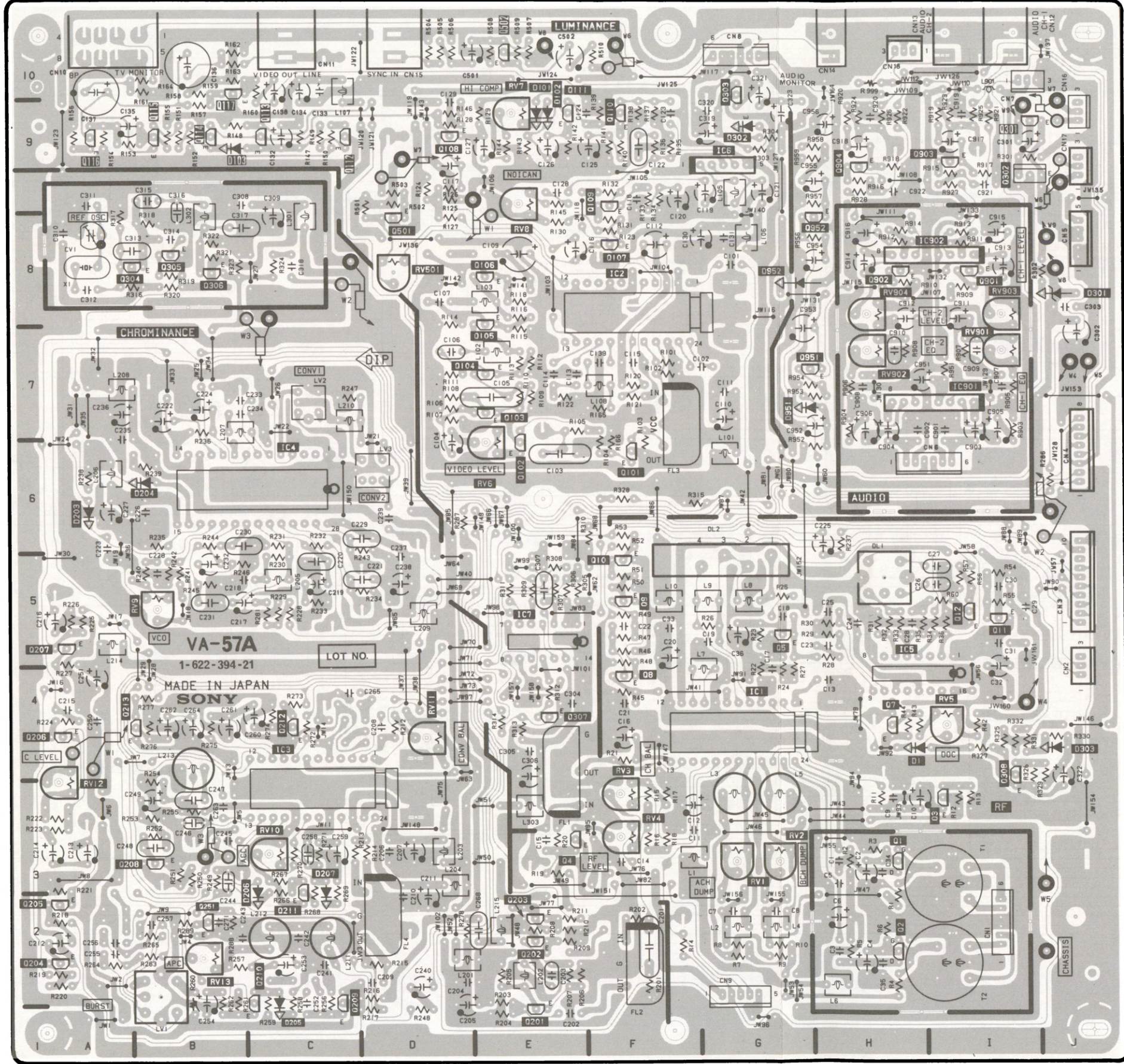


VA-57A(3/3); VIDEO DEMODULATOR/AUDIO PB AMP



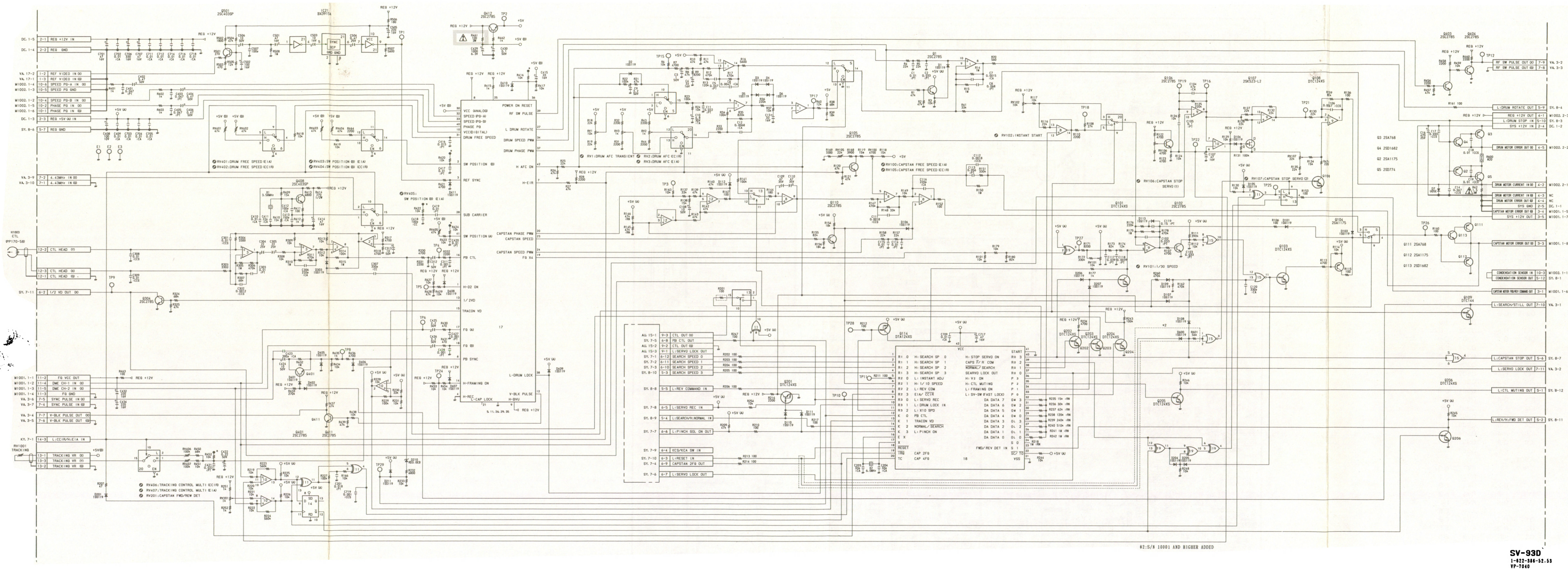
VA-57A (1-622-394-21)

CN1	I-2	Q11	I-5	RV12	A-3
CN2	J-4	Q12	I-5	RV13	B-2
CN3	J-5	Q101	F-6	RV501	D-8
CN4	J-6	Q102	E-6	RV901	I-7
CN5	J-8	Q103	E-7	RV902	H-7
CN6	I-6	Q104	E-7	RV903	I-8
CN7	J-10	Q105	E-7	RV904	H-8
CN8	G-10	Q106	E-8		
CN9	G-2	Q107	F-8	X1	A-8
CN10	A-10	Q108	D-9		
CN11	C-10	Q109	F-9		
CN12	I-10	Q110	F-9		
CN13	I-10	Q111	E-9		
CN14	H-10	Q112	C-9		
CN15	D-10	Q113	C-9		
CN16	J-9	Q114	B-9		
CN17	J-9	Q115	B-9		
CN18	H-10	Q116	A-9		
		Q117	B-10		
D1	H-4	Q201	E-1		
D101	E-9	Q202	E-2		
D102	E-9	Q203	E-2		
D103	C-9	Q204	A-2		
D203	A-6	Q205	A-2		
D204	B-6	Q206	A-4		
D205	C-1	Q207	A-5		
D206	C-2	Q208	B-3		
D207	C-2	Q209	C-2		
D301	J-8	Q210	C-2		
D302	G-9	Q211	C-3		
D303	J-4	Q212	C-4		
D951	H-7	Q213	B-4		
D952	G-8	Q251	B-2		
		Q301	J-9		
DL1	H-5	Q302	J-9		
DL2	G-5	Q303	G-9		
		Q304	B-8		
FL1	E-4	Q305	B-8		
FL2	F-2	Q306	B-8		
FL3	F-7	Q307	E-4		
FL4	D-2	Q308	I-3		
		Q501	D-8		
IC1	G-4	Q502	E-10		
IC2	F-8	Q901	I-8		
IC3	C-3	Q902	H-8		
IC4	C-6	Q903	I-9		
IC5	H-4	Q904	H-9		
IC6	G-9	Q951	H-7		
IC7	E-5	Q952	H-8		
IC901	I-7				
IC902	I-8	RV1	G-3		
		RV2	G-3		
		RV3	F-3		
LV1	B-2	RV4	F-3		
LV2	C-7	RV5	I-4		
LV3	D-6	RV6	E-6		
		RV7	E-9		
Q1	H-3	RV8	E-9		
Q2	H-2	RV9	B-5		
Q3	I-3	RV10	C-3		
Q4	E-3	RV11	D-4		
Q5	G-5				
Q7	H-4				
Q8	F-4				
Q9	F-5				
Q10	F-5				



VA-57A
-COMPONENT SIDE-
1-622-394-21
VP-1040

SV-93D;SERVO SYSTEM



NOTE:
The shaded and Δ-marked components are critical to safety.
Replace only with same components as specified.

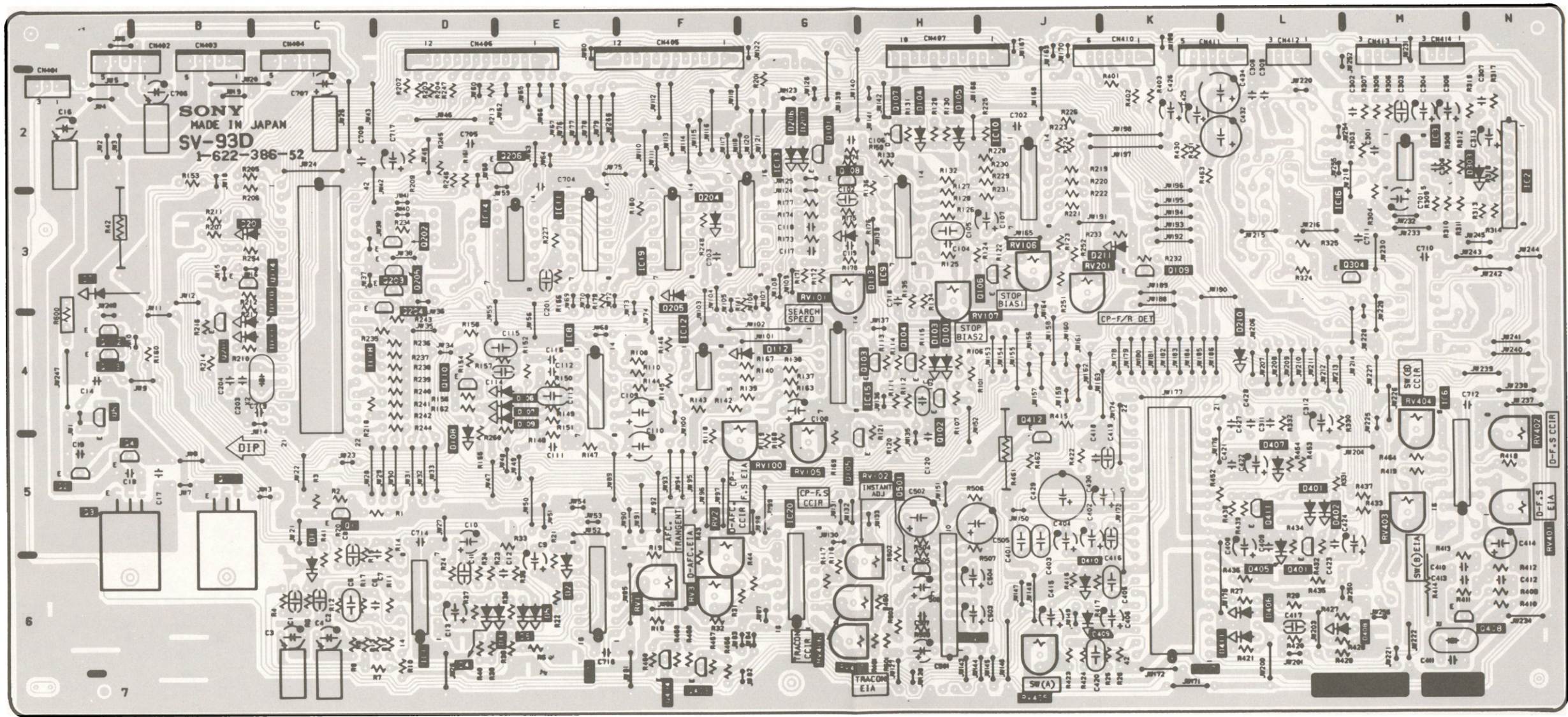
SV-93D
1-822-916-52.53
VP-7040

SV-93D;SERVO SYSTEM

EK;S/N 90001 thru 90700

SV-93D (1-622-386-52)

CN401 A-2	IC1	D-6	Q408	M-6
CN402 A-1	IC2	N-2	Q411	L-5
CN403 B-1	IC3	M-2	Q412	J-5
CN404 C-1	IC5	E-6	Q501	H-6
CN405 F-1	IC6	M-5		
CN406 D-1	IC8	E-4	RV1	F-6
CN407 H-1	IC9	H-3	RV2	F-6
CN410 K-1	IC10	J-2	RV3	F-6
CN411 K-1	IC11	E-3	RV100	F-5
CN412 L-1	IC12	F-4	RV101	G-3
CN413 M-1	IC13	G-3	RV102	H-6
CN414 M-1	IC14	E-3	RV105	G-5
	IC15	G-4	RV106	J-3
	IC17	K-5	RV107	H-3
	IC18	C-3	RV201	J-3
	IC19	F-3	RV401	N-5
	IC20	G-6	RV402	N-5
	IC21	H-6	RV403	M-5
			RV404	M-5
			RV405	J-6
			RV406	G-6
			RV407	G-6
D1 C-6	Q1	C-5		
D2 E-6	Q2	A-5	X1	M-6
D3 D-6	Q3	A-5	X2	C-4
D4 D-6	Q4	A-5		
D5 E-6	Q5	A-4		
D6 E-6	Q101	G-2		
D7 A-3	Q102	H-4		
D101 H-4	Q103	H-4		
D103 H-4	Q104	H-4		
D104 H-2	Q105	G-5		
D105 H-2	Q106	J-3		
D106 E-4	Q107	H-2		
D107 E-4	Q108	G-2		
D108 D-5	Q109	K-3		
D109 E-4	Q110	D-4		
D110 B-4	Q111	B-5		
D111 B-4	Q112	A-4		
D112 G-4	Q113	A-4		
D113 G-3	Q114	B-3		
D201 B-3	Q201	B-4		
D204 F-3	Q202	D-3		
D205 F-3	Q203	D-3		
D206 G-2	Q204	D-3		
D207 G-2	Q205	D-3		
D210 L-4	Q206	E-2		
D211 K-3	Q304	M-3		
D303 N-2	Q401	L-5		
D401 L-5	Q403	F-6		
D402 L-5	Q404	F-6		
D405 L-5				
D406 L-6				
D407 L-5				
D408 L-6				
D409 J-6				
D410 J-6				
D411 L-6				



SV-93D

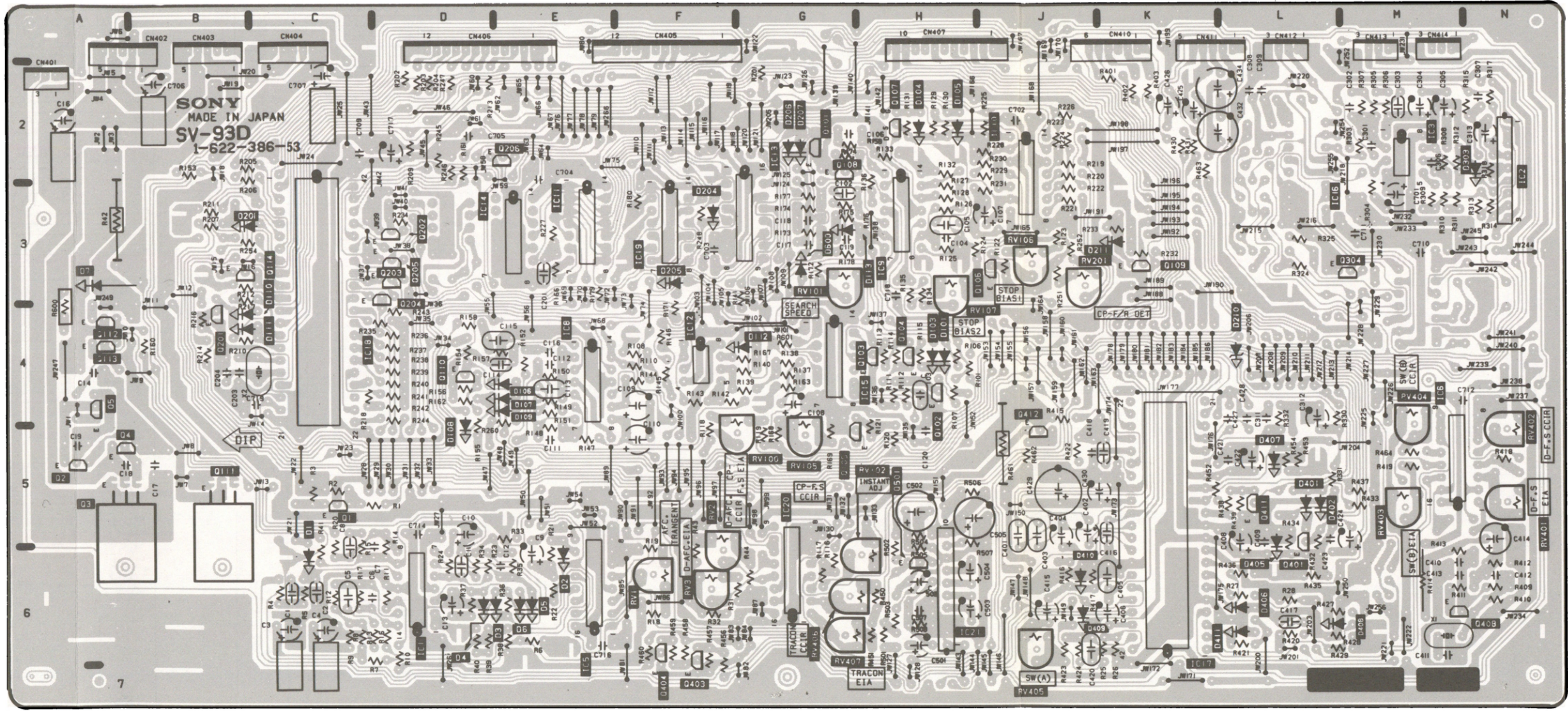
-COMPONENT SIDE-

1-622-386-52
VF-7040

SV-93D;SERVO SYSTEM
EK;S/N 10001 and higher
UC;S/N 10001 and higher

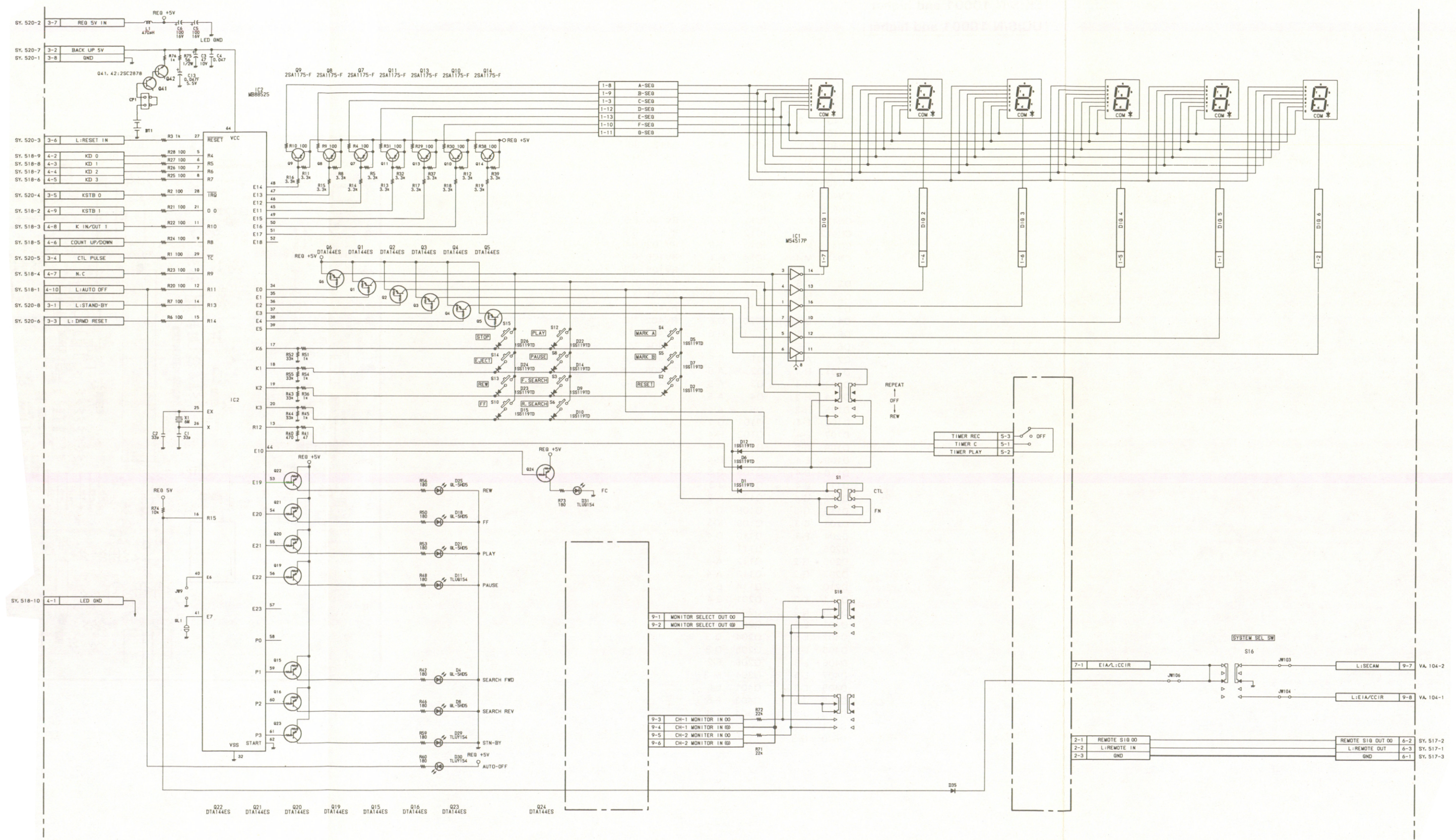
SV-93D (1-622-386-53)

CN401	A-2	IC1	D-6	Q408	M-6
CN402	A-1	IC2	N-2	Q411	L-5
CN403	B-1	IC3	M-2	Q412	J-5
CN404	C-1	IC5	E-6	Q501	H-6
CN405	F-1	IC6	M-5		
CN406	D-1	IC8	E-4	RV1	F-6
CN407	H-1	IC9	H-3	RV2	F-6
CN410	K-1	IC10	J-2	RV3	F-6
CN411	K-1	IC11	E-3	RV100	F-5
CN412	L-1	IC12	F-4	RV101	G-3
CN413	M-1	IC13	G-3	RV102	H-6
CN414	M-1	IC14	E-3	RV105	G-5
		IC15	G-4	RV106	J-3
		IC17	K-5	RV107	H-3
		IC18	C-3	RV201	J-3
		IC19	F-3	RV401	N-5
		IC20	G-6	RV402	N-5
		IC21	H-6	RV403	M-5
				RV404	M-5
				RV405	J-6
				RV406	G-6
				RV407	G-6
D1	C-6	Q1	C-5	X1	M-6
D2	E-6	Q2	A-5	X2	C-4
D3	D-6	Q3	A-5		
D4	D-6	Q4	A-5		
D5	E-6	Q5	A-4		
D6	E-6	Q101	G-2		
D7	A-3	Q102	H-4		
D101	H-4	Q103	H-4		
D103	H-4	Q104	H-4		
D104	H-2	Q105	G-5		
D105	H-2	Q106	J-3		
D106	E-4	Q107	H-2		
D107	E-4	Q108	G-2		
D108	D-5	Q109	K-3		
D109	E-4	Q110	D-4		
D110	B-4	Q111	B-5		
D111	B-4	Q112	A-4		
D112	G-4	Q113	A-4		
D113	G-3	Q114	B-3		
D201	B-3	Q201	B-4		
D204	F-3	Q202	D-3		
D205	F-3	Q203	D-3		
D206	G-2	Q204	D-3		
D207	G-2	Q205	D-3		
D210	L-4	Q206	E-2		
D211	K-3	Q304	M-3		
D303	N-2	Q401	L-5		
D401	L-5	Q403	F-6		
D402	L-5	Q404	F-6		
D405	L-6				
D406	L-6				
D407	L-5				
D408	L-6				
D409	J-6				
D410	J-6				
D411	L-6				
D600	G-3				



SV-93D
-COMPONENT SIDE-
1-622-386-53
VP-7040

KY-105D;FUNCTION KEY/DISPLAY

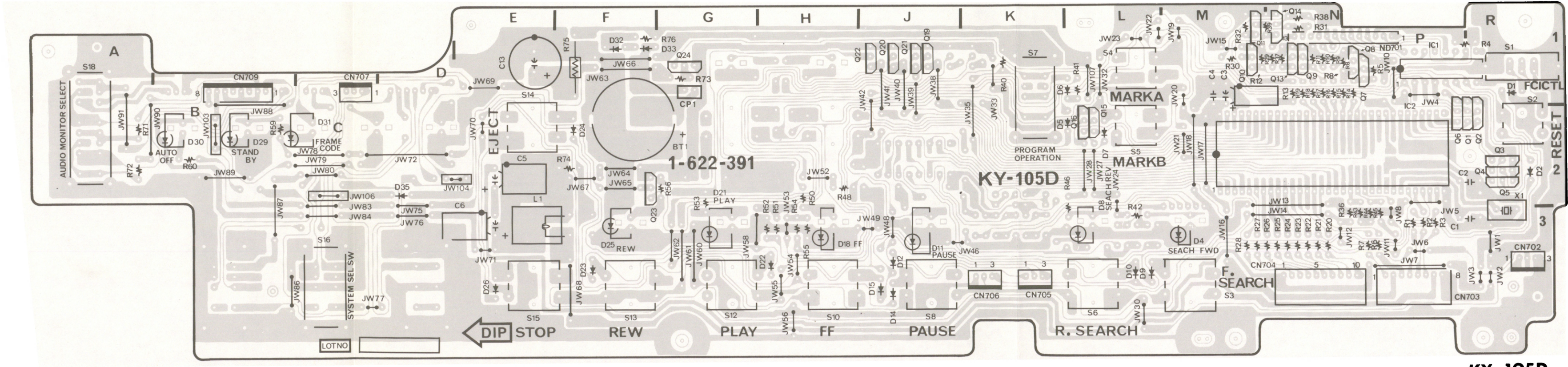


KY-105D;FUNCTION KEY/DISPLAY

EK;S/N 90001 thru 90700

KY-105D (1-622-391-54)

BT1	F-2	Q1	R-2
		Q2	R-2
CN702	R-3	Q3	R-2
CN703	P-3	Q4	R-2
CN704	N-3	Q5	R-2
CN705	K-3	Q6	P-2
CN706	K-3	Q7	N-1
CN707	C-1	Q8	N-1
CN709	B-1	Q9	N-1
		Q10	M-1
CP1	G-1	Q11	M-1
		Q13	N-1
D1	R-1	Q14	N-1
D2	R-2	Q15	L-2
D4	M-3	Q16	L-2
D5	L-2	Q19	J-1
D6	L-1	Q20	J-1
D7	L-2	Q21	J-1
D8	L-3	Q22	J-1
D9	L-3	Q23	F-2
D10	L-3	Q24	G-1
D11	J-3		
D12	J-3	S1	R-1
D14	J-3	S2	R-2
D15	J-3	S3	M-3
D18	H-3	S4	L-1
D21	G-3	S5	L-2
D22	H-3	S6	L-3
D23	F-3	S7	K-1
D24	F-2	S8	J-3
D25	F-3	S10	H-3
D29	B-2	S12	G-3
D30	B-2	S13	F-3
D31	B-2	S14	E-2
D32	F-1	S15	E-3
D33	F-1	S16	C-3
D35	D-2	S18	A-2
IC1	P-1	X1	R-3
IC2	N-2		



KY-105D
-COMPONENT SIDE-
1-622-391-54
VP-7040

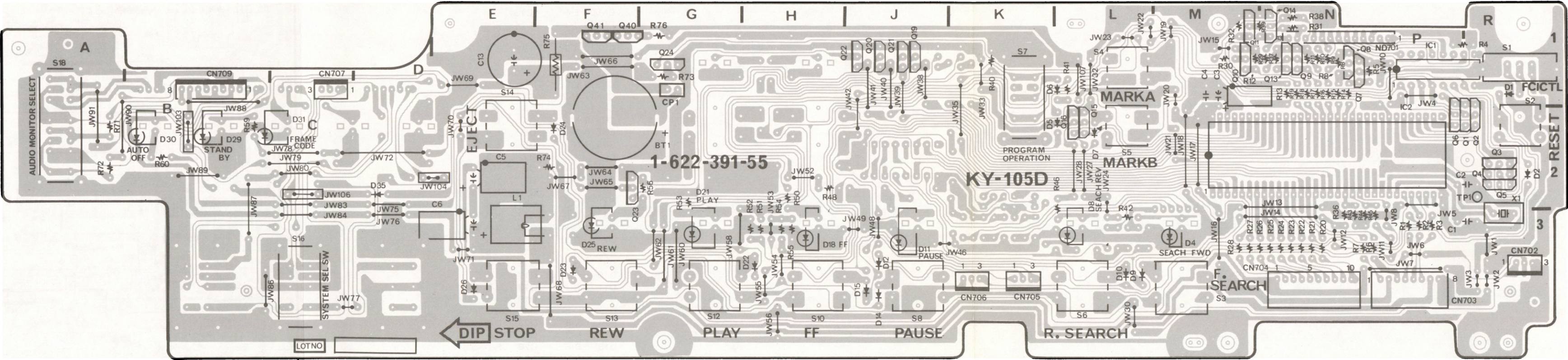
KY-105D;FUNCTION KEY/DISPLAY

EK;S/N 10001 and higher

UC;S/N 10001 and higher

KY-105D (1-622-391-55)

BT1	F-2	Q1	R-2
		Q2	R-2
CN702	R-3	Q3	R-2
CN703	P-3	Q4	R-2
CN704	N-3	Q5	R-2
CN705	K-3	Q6	P-2
CN706	K-3	Q7	N-1
CN707	C-1	Q8	N-1
CN709	B-1	Q9	N-1
		Q10	M-1
CP1	G-1	Q11	M-1
		Q13	N-1
D1	R-1	Q14	N-1
D2	R-2	Q15	L-2
D4	M-3	Q16	L-2
D5	L-2	Q18	J-1
D6	L-1	Q19	J-1
D7	L-2	Q20	J-1
D8	L-3	Q21	J-1
D9	L-3	Q22	J-1
D10	L-3	Q23	F-2
D11	J-3	Q24	G-1
D12	J-3	Q40	F-1
D14	J-3	Q41	F-1
D15	J-3		
D18	H-3	S1	R-1
D21	G-3	S2	R-2
D22	H-3	S3	M-3
D23	F-3	S4	L-1
D24	F-2	S5	L-2
D25	F-3	S6	L-3
D26	E-3	S7	K-1
D29	B-2	S8	J-3
D30	B-2	S10	H-3
D31	B-2	S12	G-3
D35	D-2	S13	F-3
		S14	E-2
		S15	E-3
IC1	P-1	S16	C-3
IC2	N-2	S18	A-2
		TP1	R-2
		X1	R-3

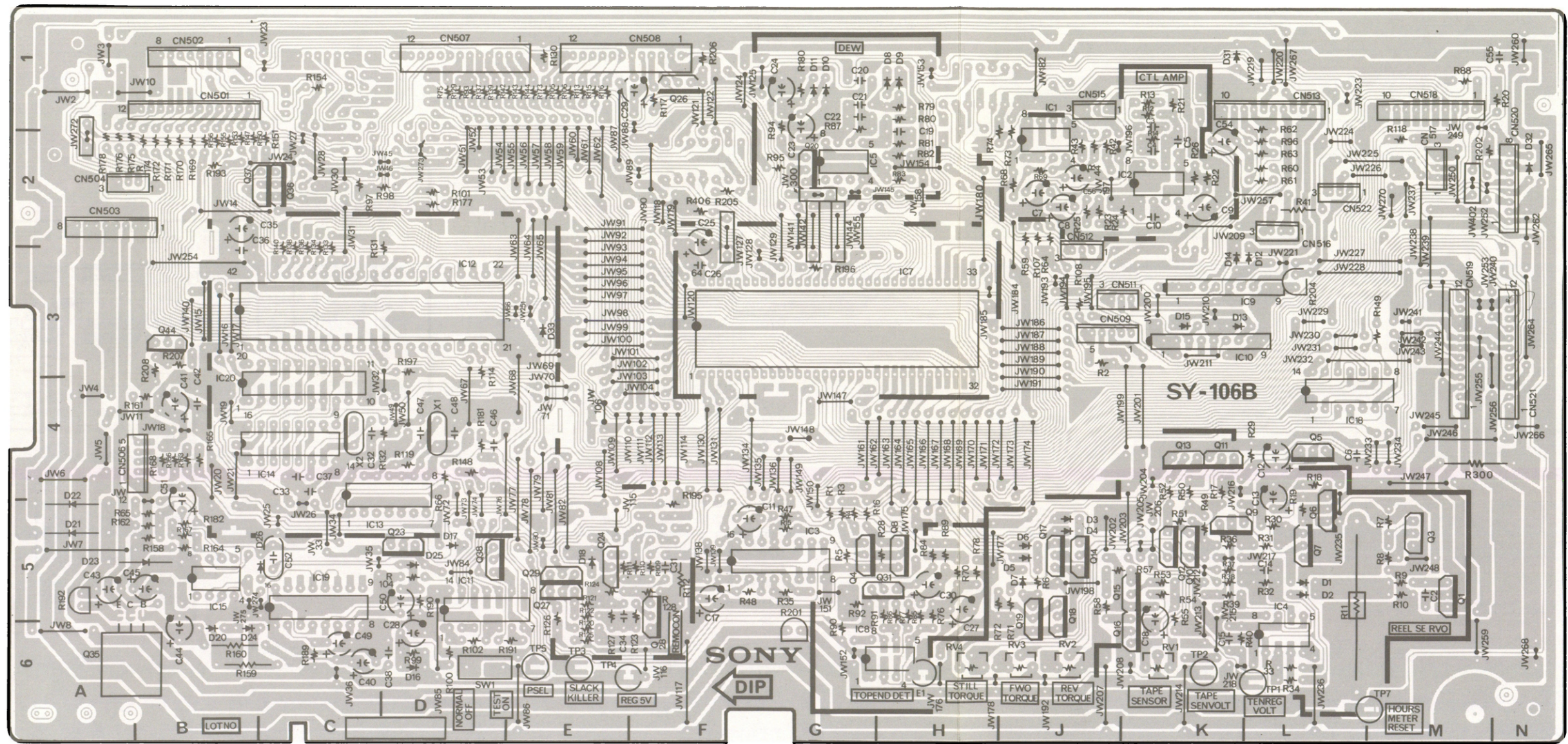


KY-105D
-COMPONENT SIDE-
1-622-391-55
1P-1046

SY-106B;SYSTEM CONTROL

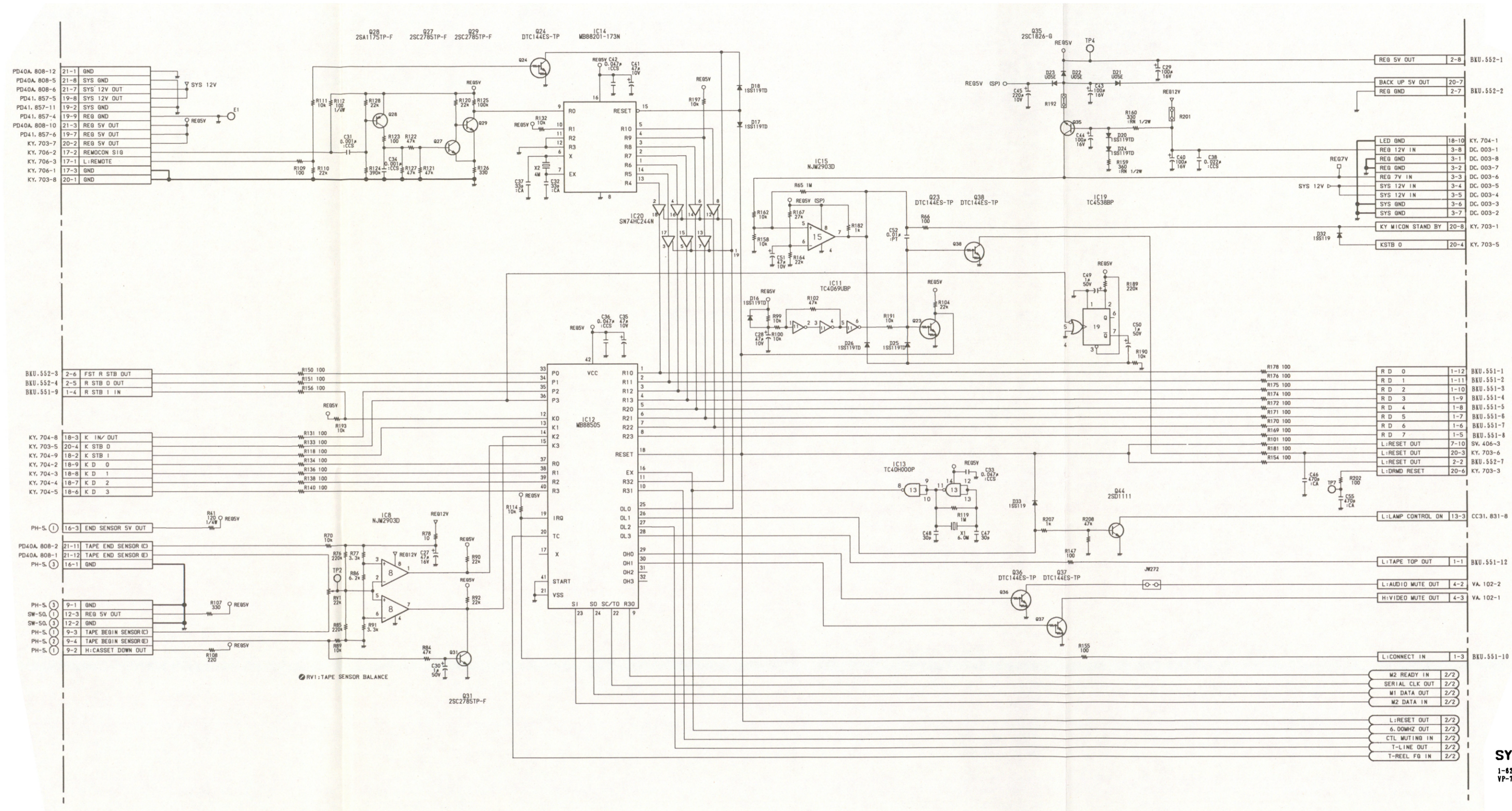
SY-106B (1-622-389-33)

CN501 B-1	IC7	G-3	TP4	F-4
CN502 B-1	IC8	H-6	TP5	E-6
CN503 A-2	IC9	K-3	TP7	M-6
CN503 A-2	IC10	K-3		
CN506 B-4	IC11	D-5	X1	D-4
CN507 D-1	IC12	C-3	X2	C-4
CN508 E-1	IC13	D-4		
CN509 J-3	IC14	C-4		
CN511 J-3	IC15	B-5		
CN512 J-3	IC18	L-4		
CN513 L-1	IC19	C-5		
CN515 J-1	IC20	C-4		
CN516 L-2				
CN517 M-2	Q1	M-5		
CN518 M-1	Q3	M-5		
CN519 M-3	Q4	G-5		
CN520 N-2	Q5	L-4		
CN521 N-3	Q6	L-5		
	Q7	L-5		
D1	L-5	Q8	H-5	
D2	L-5	Q9	K-5	
D3	D-5	Q10	K-5	
D4	D-5	Q11	K-4	
D5	D-5	Q12	K-5	
D6	D-5	Q13	K-4	
D7	D-5	Q14	J-5	
D8	H-1	Q15	K-5	
D9	H-1	Q16	K-5	
D10	G-1	Q17	J-5	
D11	G-1	Q18	J-5	
D12	L-3	Q19	J-5	
D13	K-3	Q20	G-2	
D14	K-3	Q23	D-5	
D15	K-3	Q24	E-5	
D16	D-6	Q26	F-1	
D18	E-5	Q27	F-5	
D20	B-6	Q28	F-5	
D21	A-5	Q29	E-5	
D22	A-5	Q35	A-6	
D23	B-5	Q36	C-2	
D24	B-6	Q37	C-2	
D26	C-5	Q38	D-5	
D31	K-1	Q44	B-3	
D32	N-2			
D33	E-3	RV1	K-6	
		RV2	J-6	
E1	H-6	RV3	J-6	
		RV4	H-6	
IC1	J-2			
IC2	K-2	SW1	D-6	
IC3	G-5			
IC4	L-6	TP1	L-6	
IC5	G-2	TP2	K-6	
		TP3	E-6	

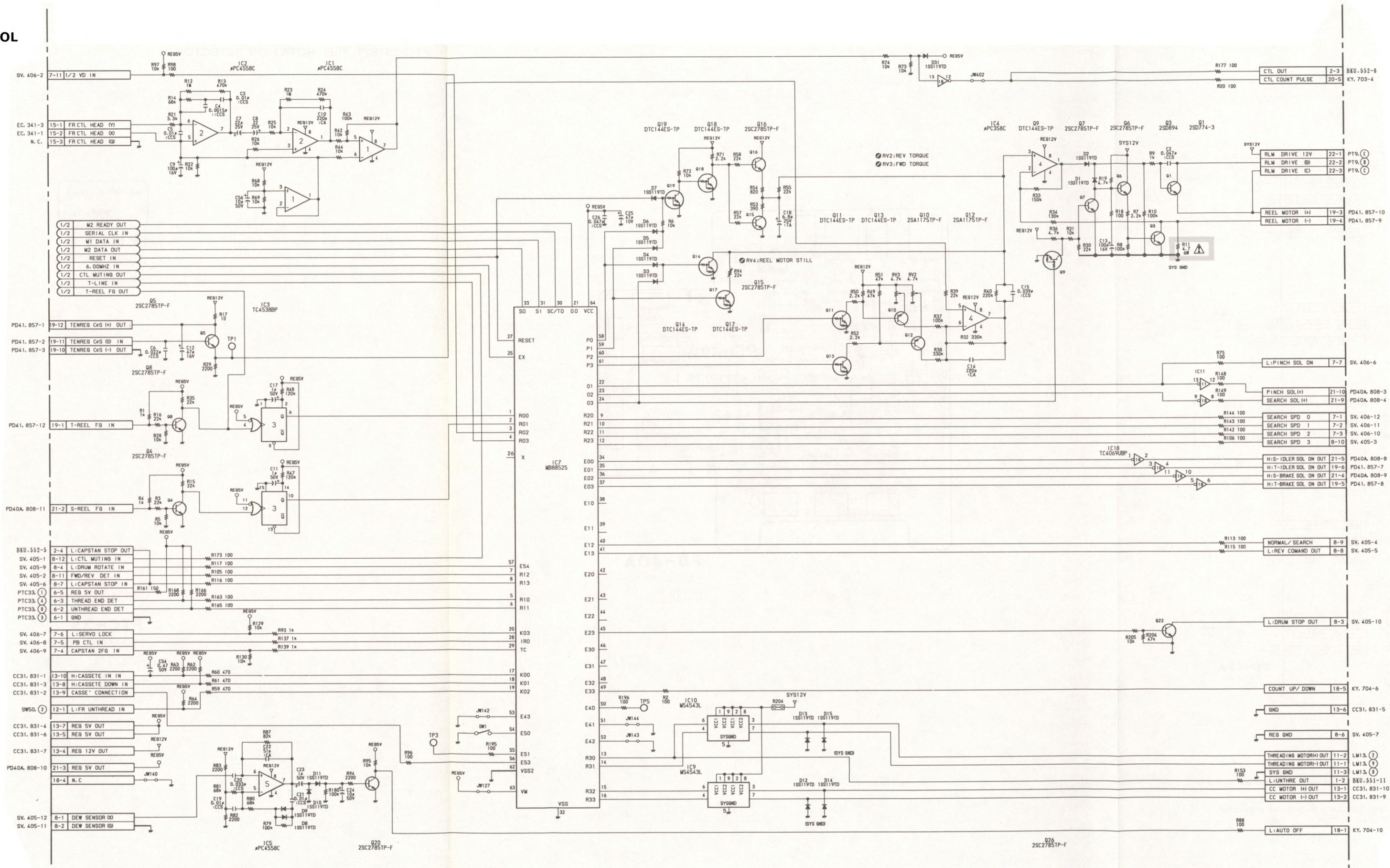


SY-106B
-COMPONENT SIDE-
1-622-389-33
VP-1048

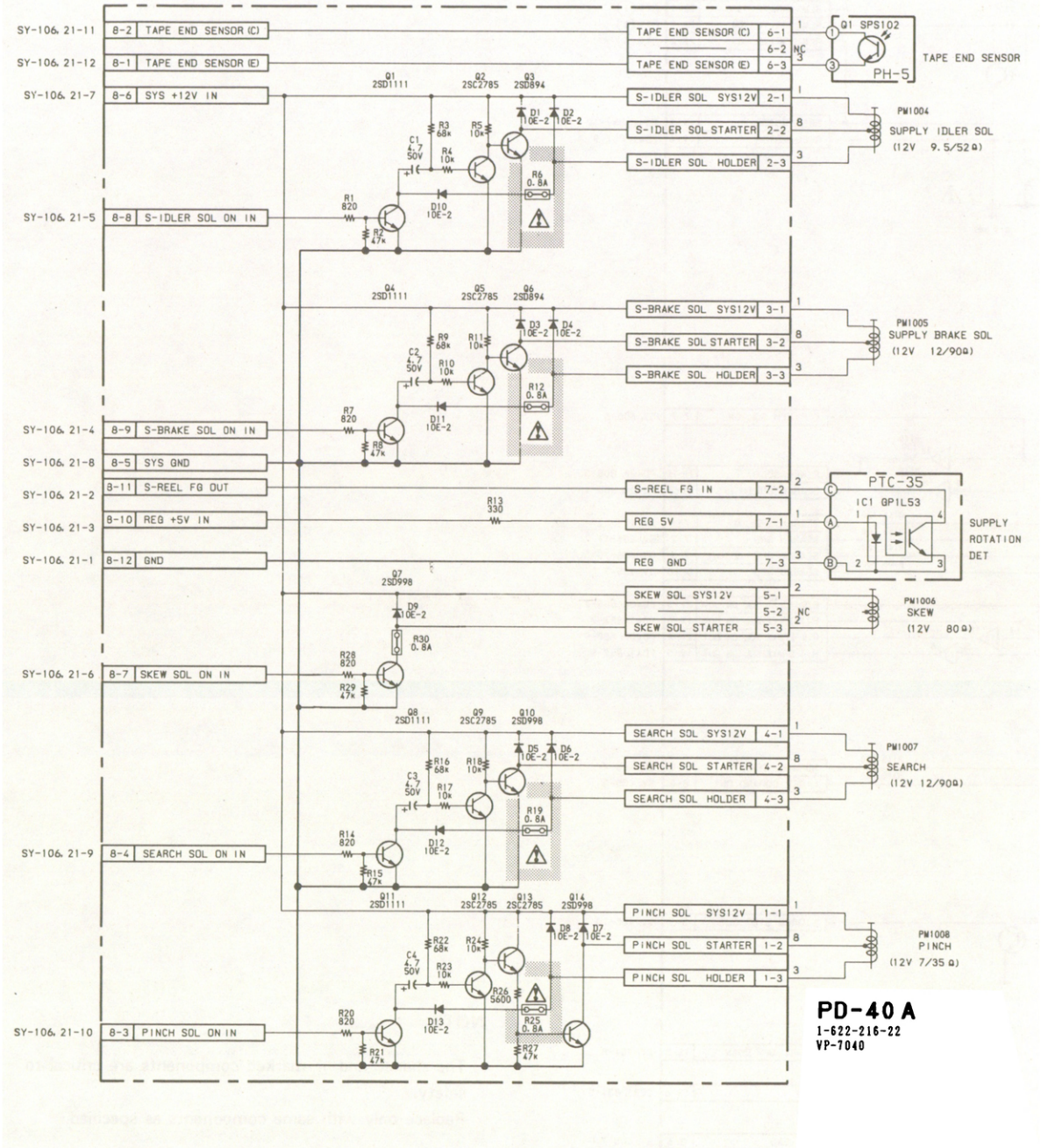
SY-106B(1/2);SYSTEM CONTROL



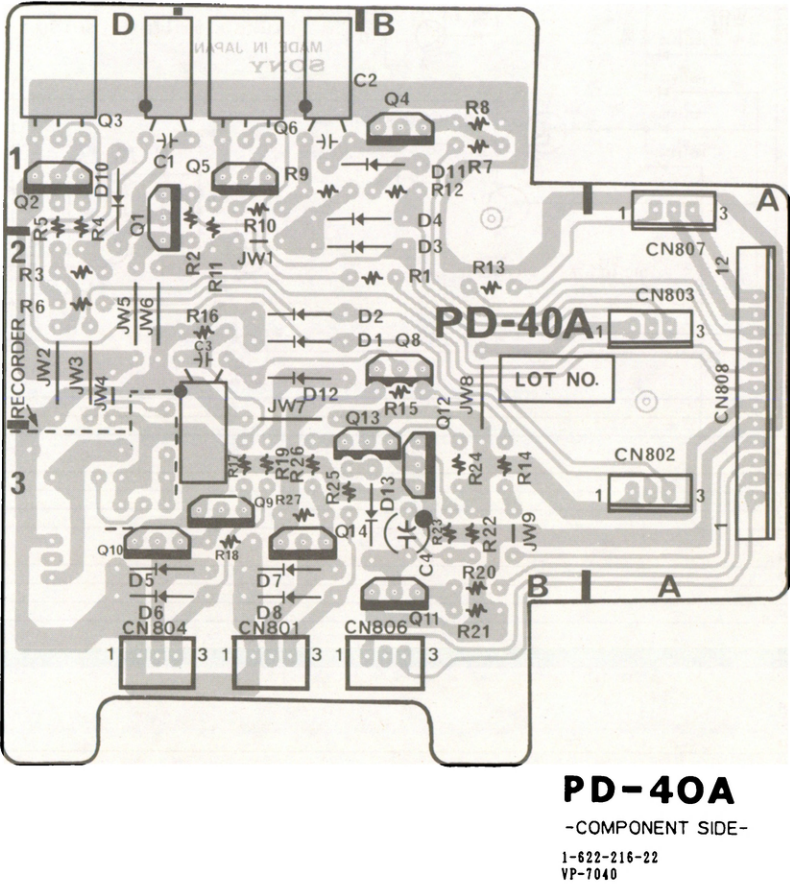
SY-106B(2/2);SYSTEM CONTROL



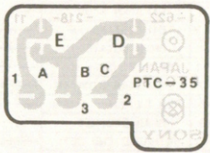
PD-40A; PLUNGER SOLENOIDS



PH-5: TAPE BEGINNING/END SENSOR
PTC-35: S/T REEL ROTATION DETECTOR

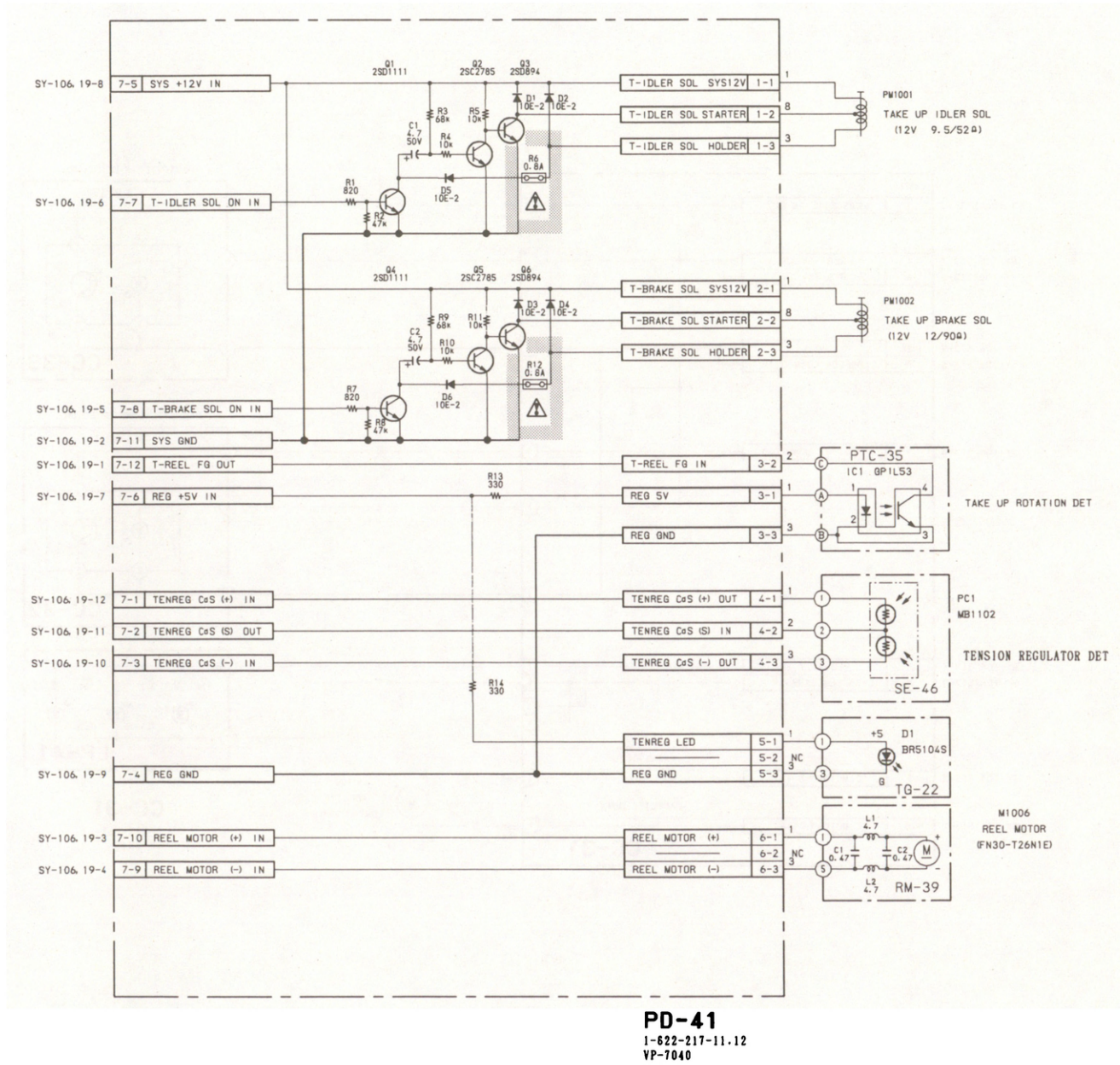


PH-5
-COMPONENT SIDE-
1-603-737-11
VP-7040



PTC-35
-COMPONENT SIDE-
1-622-216-11
VP-7040

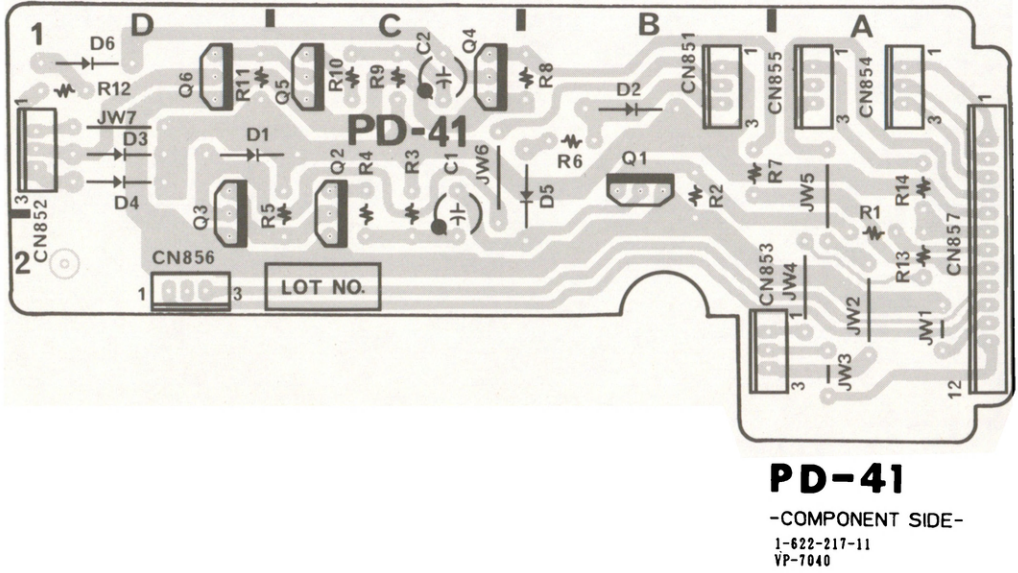
PD-41; PLUNGER SOLENOIDS



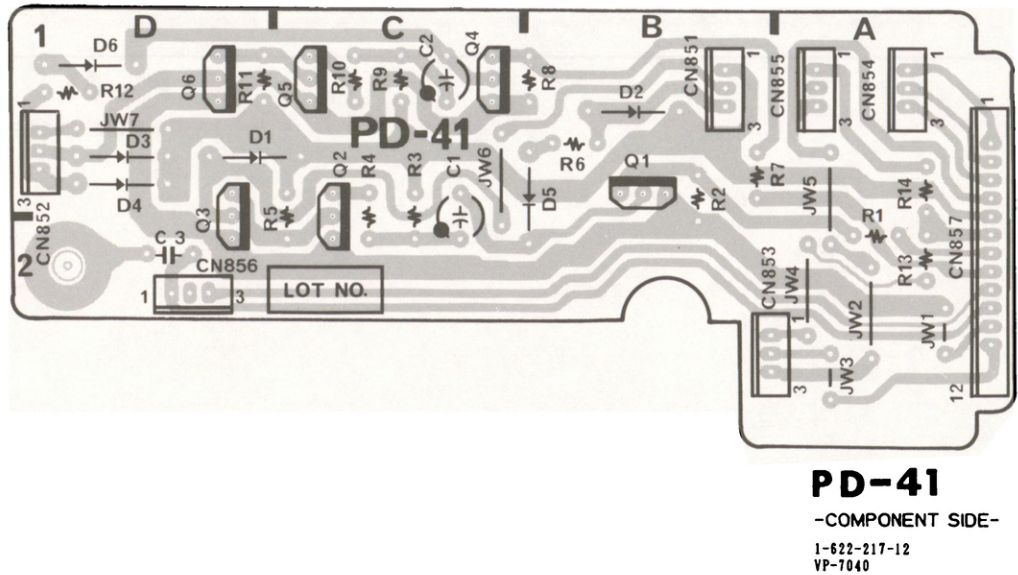
NOTE:

The shaded and Δ -marked components are critical to safety.
Replace only with same components as specified.

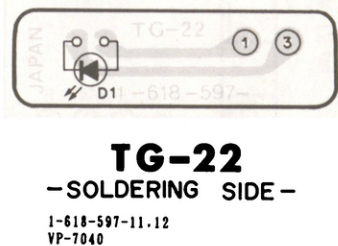
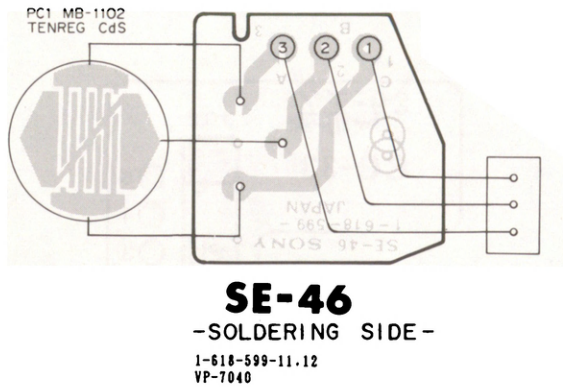
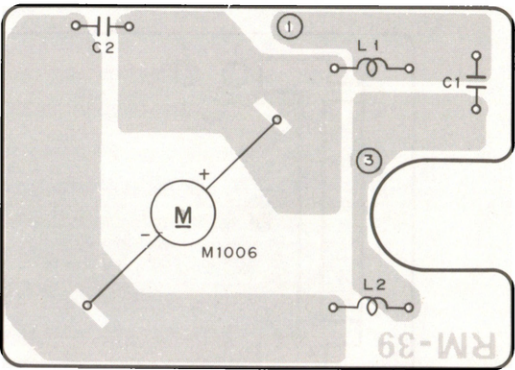
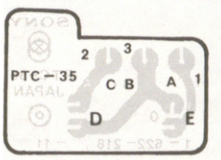
EK;S/N 90001 thru 90700



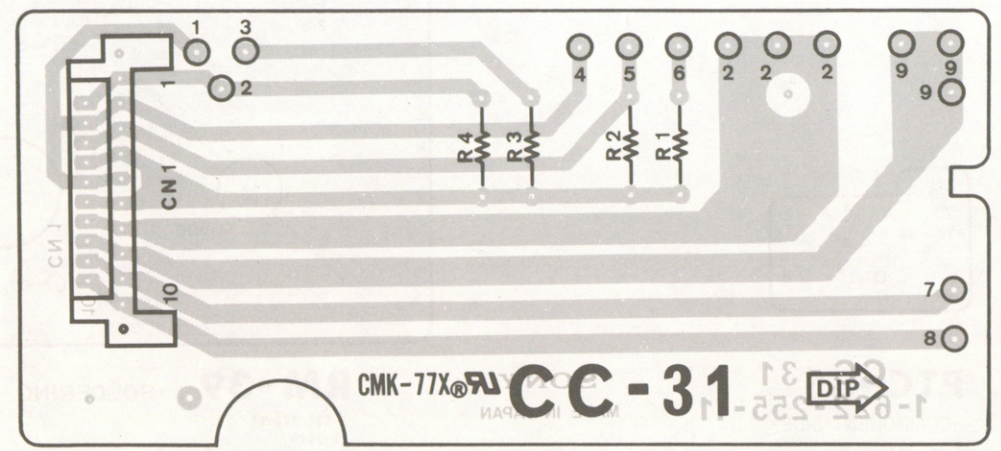
EK;S/N 10001 and higher
UC;S/N 10001 and higher



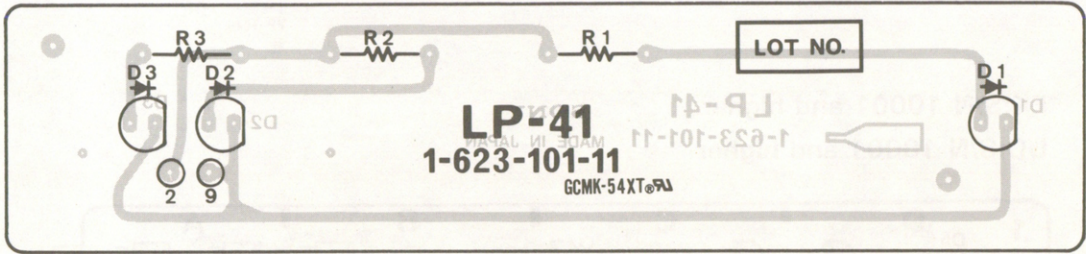
PTC-35;S/T REEL ROTATION DETECTOR
RM-39;REEL MOTOR
SE-46;TENSION REGULATOR DETECTOR
TG-22;TENSION REGULATOR LED



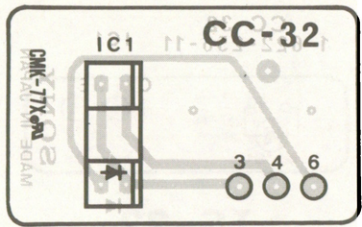
CC-31;CASSETTE UP COMPARTMENT
CC-32;CASSETTE IN DETECTOR
CC-33;CASSETTE DOWN DETECTOR
LP-41; CASSETTE COMPARTMENT LIGHT



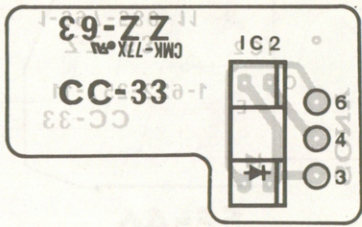
CC-31
-COMPONENT SIDE-
1-622-255-11
VP-7040



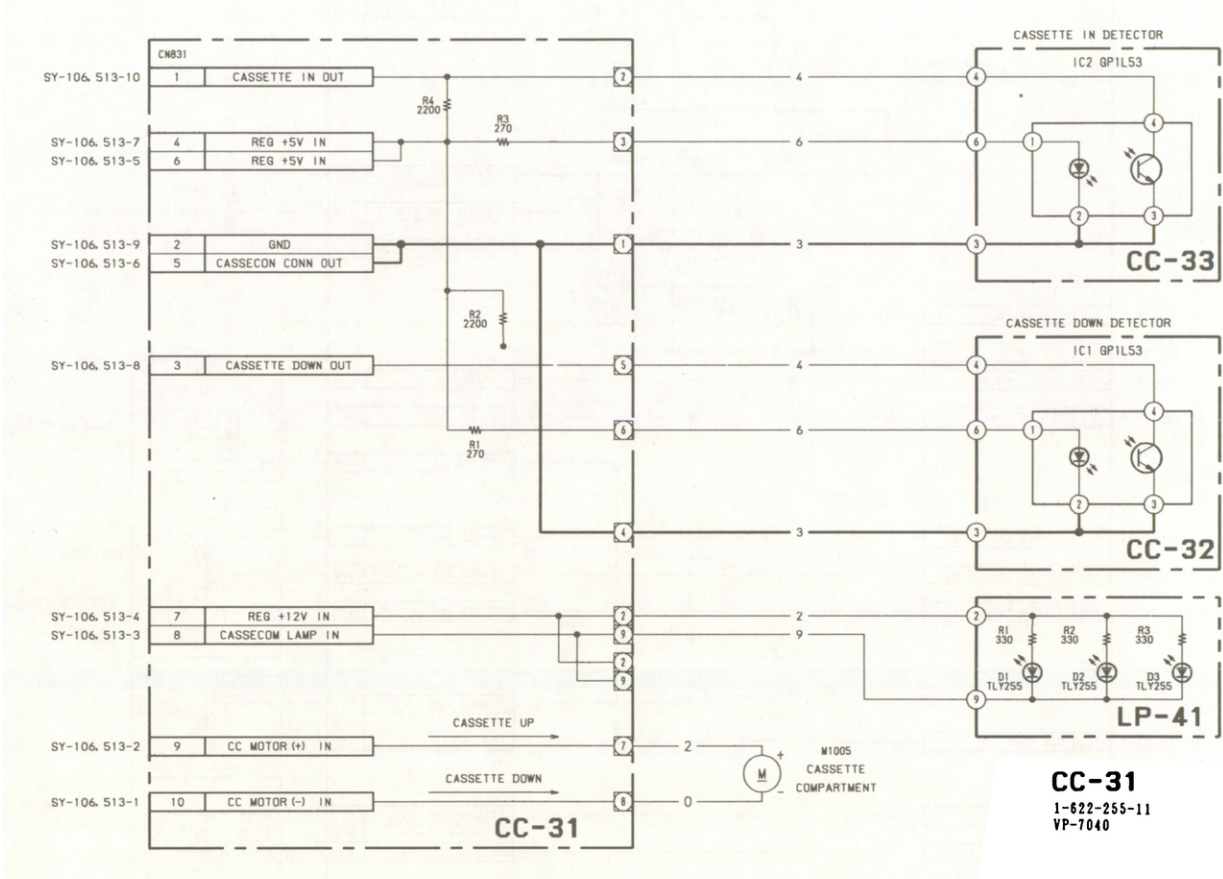
LP-41
-COMPONENT SIDE-
1-623-101-11
VP-7040



CC-32
-COMPONENT SIDE-
1-622-256-11
VP-7040

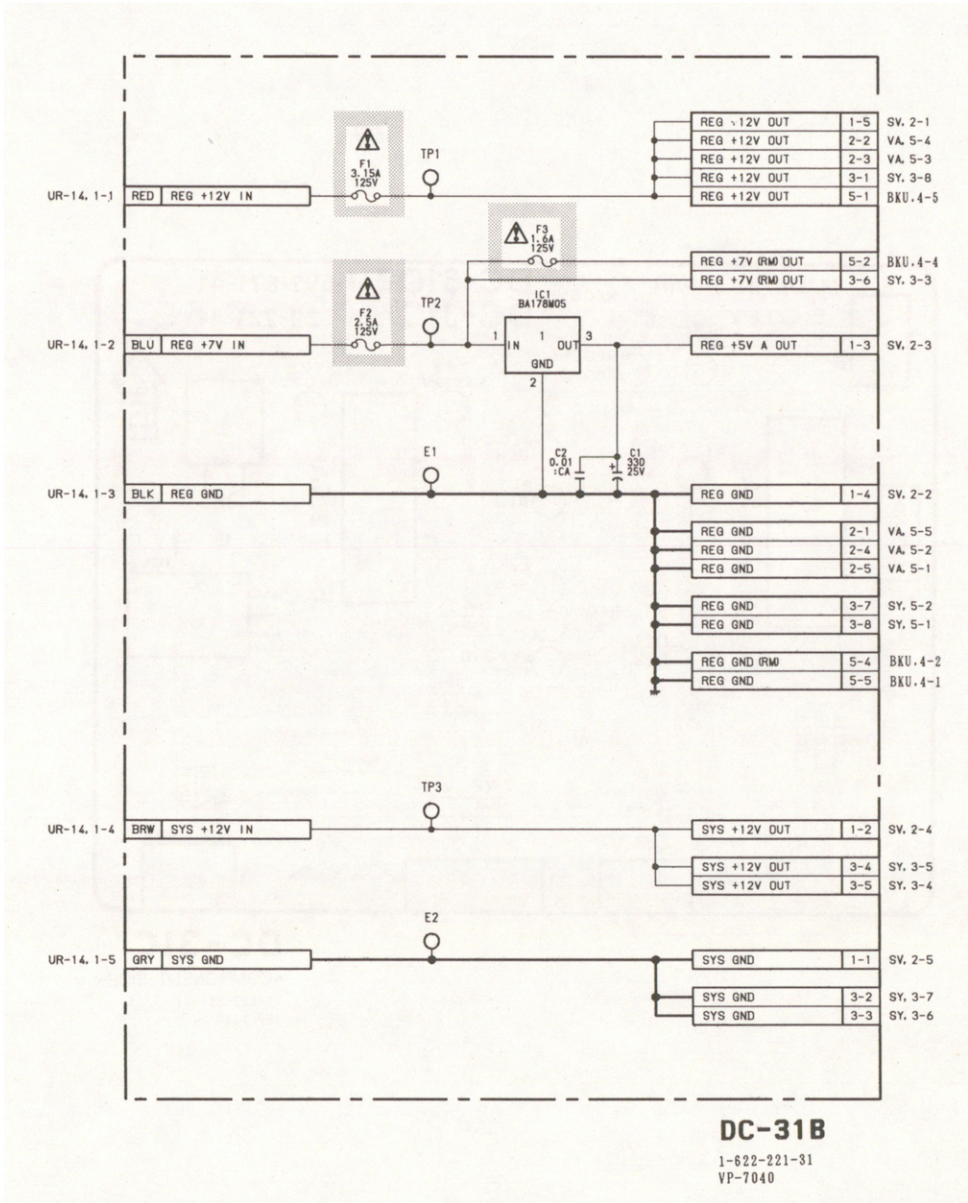


CC-33
-COMPONENT SIDE-
1-622-257-11
VP-7040




CC-31
1-622-255-11
VP-7040

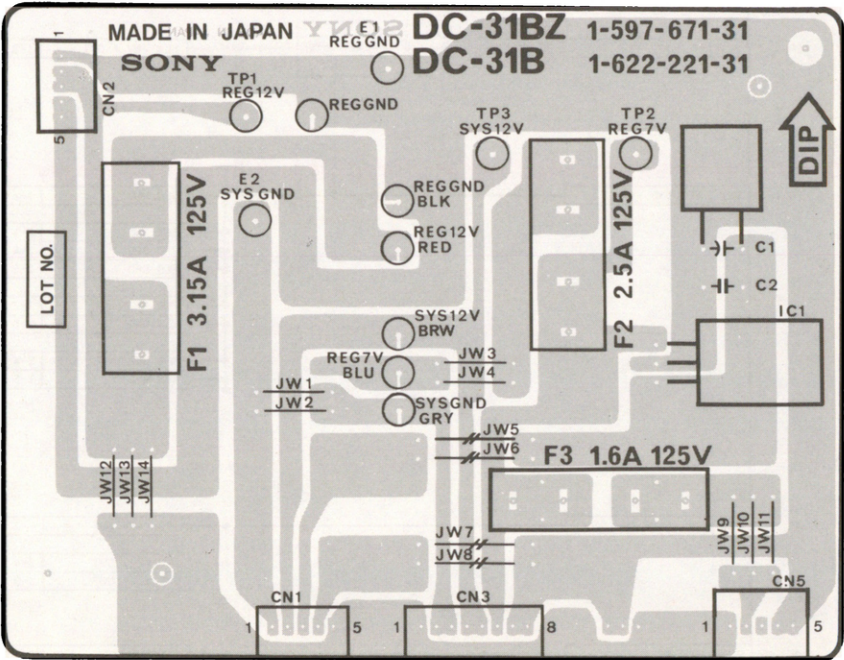
DC-31B;DC SUPPLY (FOR UC)



NOTE:

The shaded and -marked components are critical to safety.

Replace only with same components as specified.



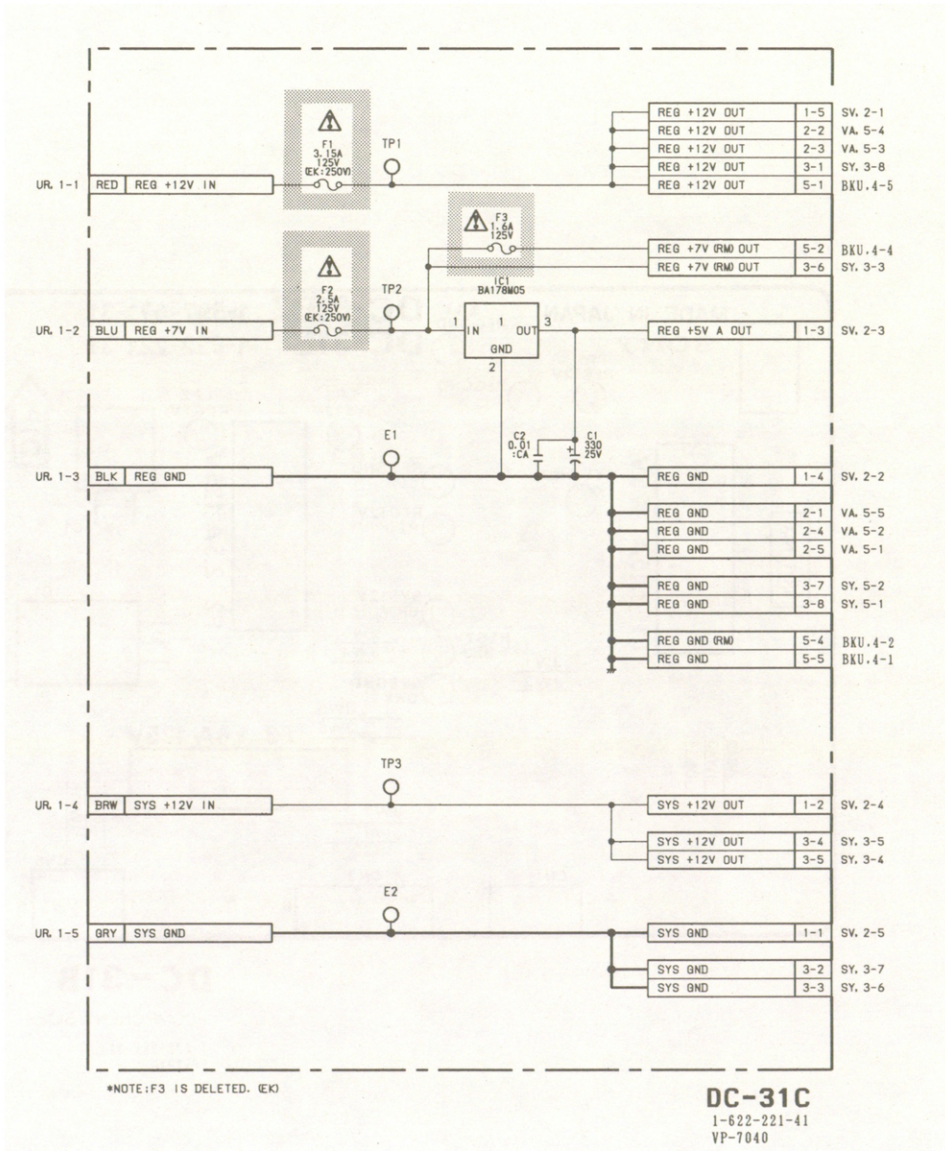
DC-31B

-COMPONENT SIDE-

1-622-221-31

VP-7040

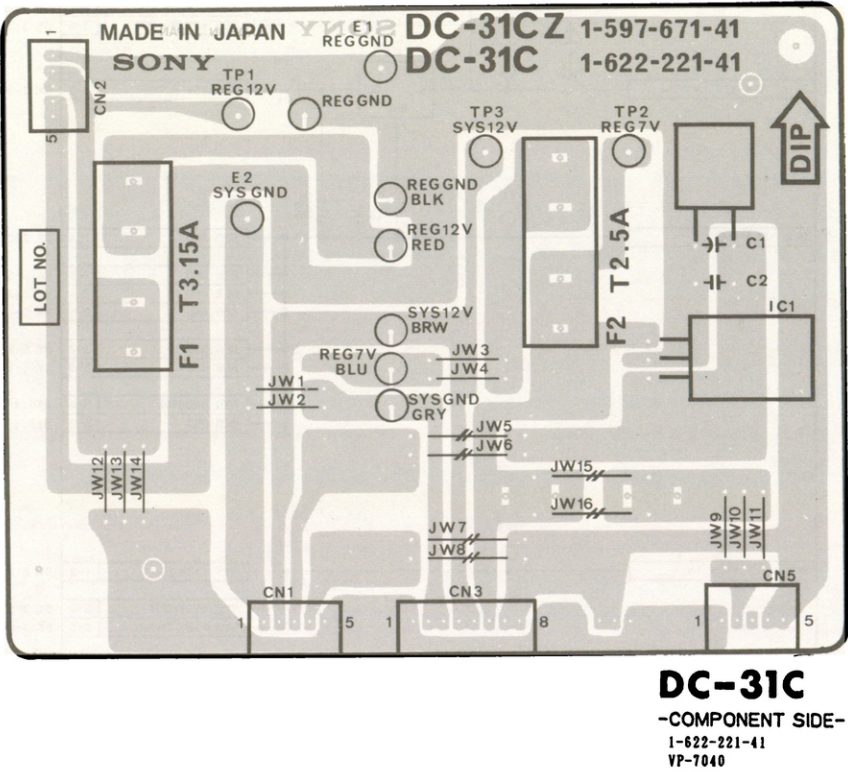
DC-31C;DC SUPPLY (FOR EK)



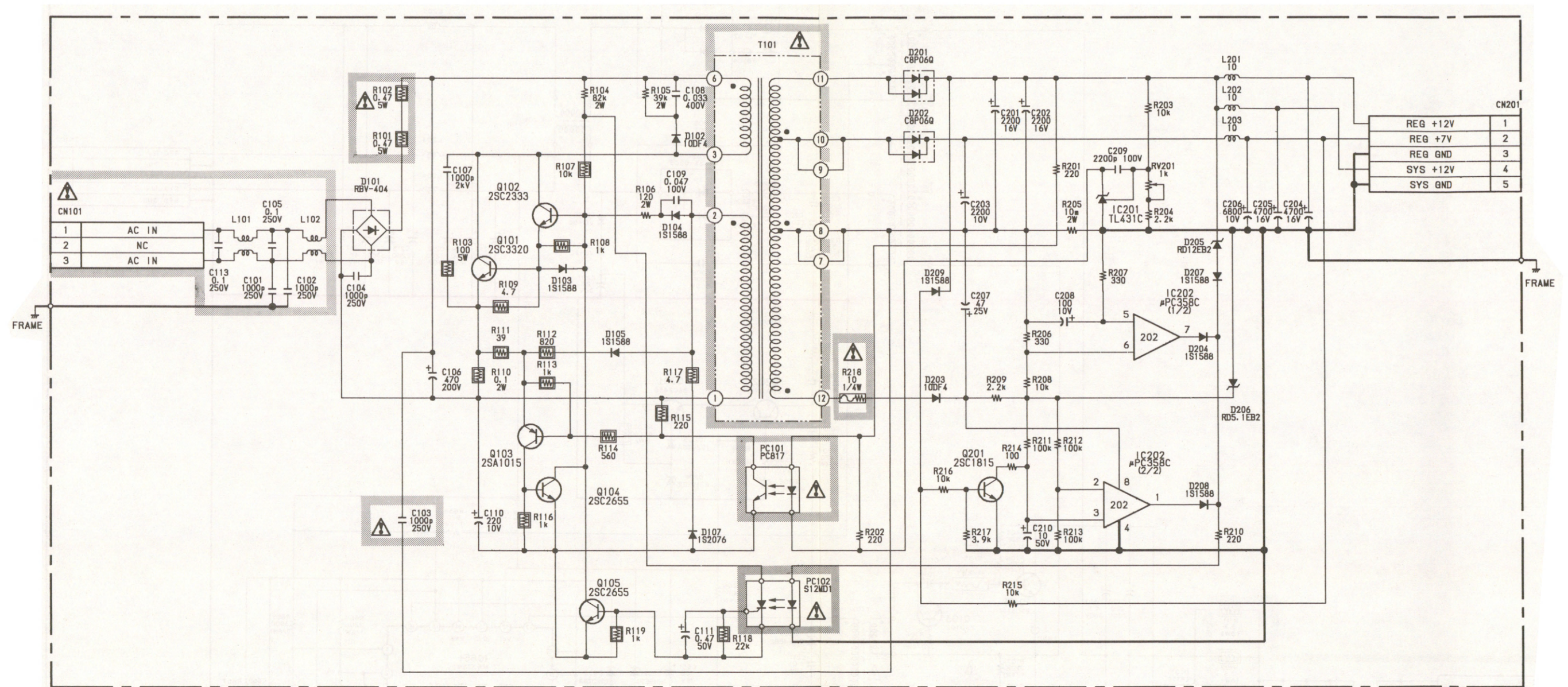
NOTE;

The shaded and Δ -marked components are critical to safety.

Replace only with same components as specified.



435-A : SWITCHING REGULATOR (FOR UC)



435-A

1-413-259-11
VP-7040

NOTE:

The shaded and Δ -marked components are critical to safety.
Replace only with same components as specified.

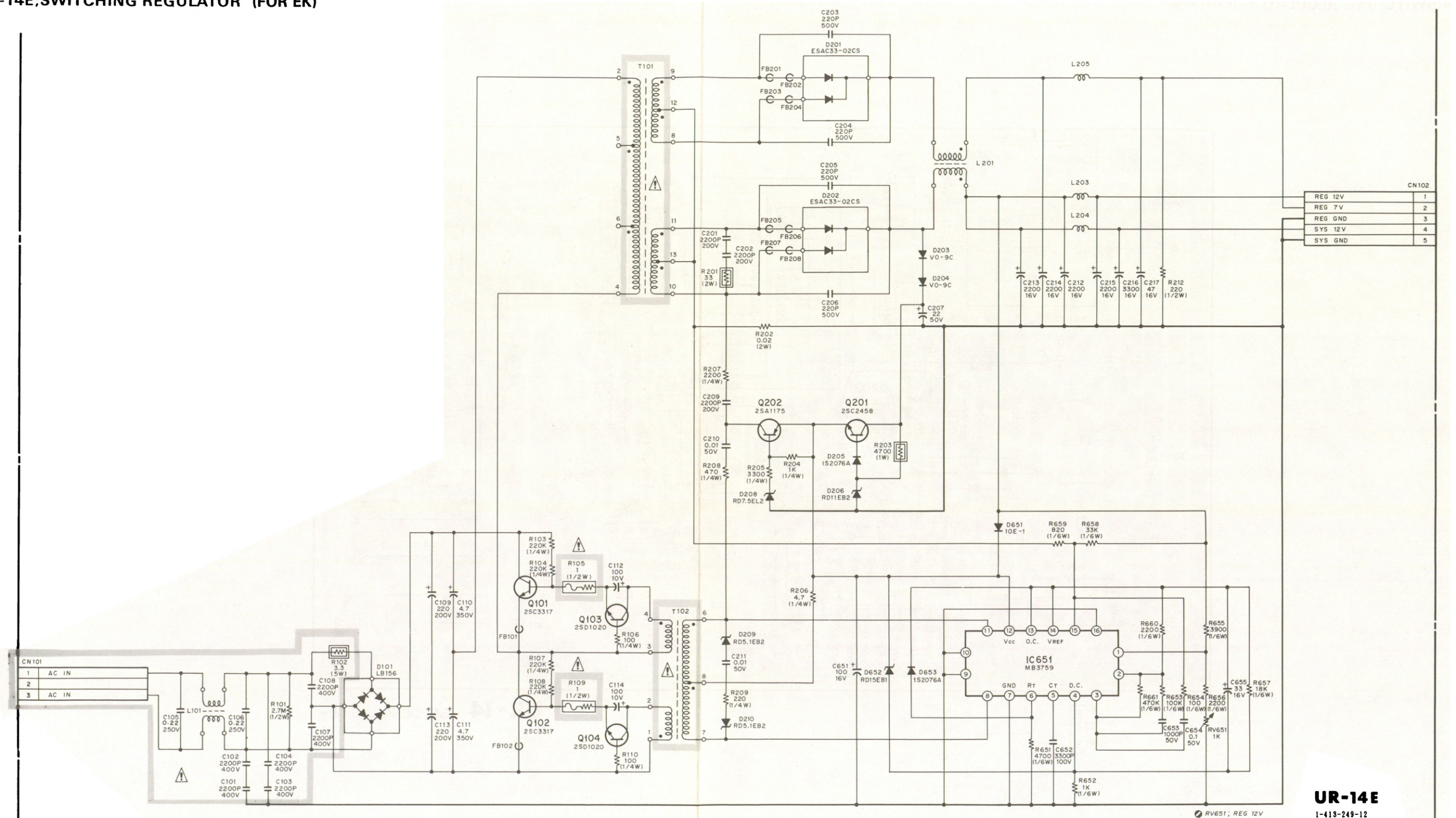
The schematic diagram illustrates the internal circuitry of the UR-14 power supply. It begins with an AC input (CN101) connected to a transformer (T101). The secondary windings of T101 provide multiple voltage levels for different stages of the circuit. A full-bridge rectifier (D101, LB156) converts the AC from one winding. The resulting DC is filtered by capacitors C102, C103, C104, C105, C106, C107, and C108. The circuit then splits into two main paths. One path uses a second transformer (T102) and a full-bridge rectifier (D201, ESAC33-02CS) to produce a regulated 12V output (REG 12V). The other path uses a third transformer (T103) and a full-bridge rectifier (D202, ESAC33-02CS) to produce a regulated 7V output (REG 7V). Both regulated outputs are connected to the DC-31 connector (CN102). The circuit also includes various resistors (R101, R102, R103, R104, R105, R106, R107, R108, R109, R110, R111, R112, R113, R114, R115, R116, R117, R118, R119, R120, R121, R122, R123, R124, R125, R126, R127, R128, R129, R130, R131, R132, R133, R134, R135, R136, R137, R138, R139, R140, R141, R142, R143, R144, R145, R146, R147, R148, R149, R150, R151, R152, R153, R154, R155, R156, R157, R158, R159, R160, R161, R162, R163, R164, R165, R166, R167, R168, R169, R170, R171, R172, R173, R174, R175, R176, R177, R178, R179, R180, R181, R182, R183, R184, R185, R186, R187, R188, R189, R190, R191, R192, R193, R194, R195, R196, R197, R198, R199, R200, R201, R202, R203, R204, R205, R206, R207, R208, R209, R210, R211, R212, R213, R214, R215, R216, R217, R218, R219, R220, R221, R222, R223, R224, R225, R226, R227, R228, R229, R230, R231, R232, R233, R234, R235, R236, R237, R238, R239, R240, R241, R242, R243, R244, R245, R246, R247, R248, R249, R250, R251, R252, R253, R254, R255, R256, R257, R258, R259, R260, R261, R262, R263, R264, R265, R266, R267, R268, R269, R270, R271, R272, R273, R274, R275, R276, R277, R278, R279, R280, R281, R282, R283, R284, R285, R286, R287, R288, R289, R290, R291, R292, R293, R294, R295, R296, R297, R298, R299, R300, R301, R302, R303, R304, R305, R306, R307, R308, R309, R310, R311, R312, R313, R314, R315, R316, R317, R318, R319, R320, R321, R322, R323, R324, R325, R326, R327, R328, R329, R330, R331, R332, R333, R334, R335, R336, R337, R338, R339, R340, R341, R342, R343, R344, R345, R346, R347, R348, R349, R350, R351, R352, R353, R354, R355, R356, R357, R358, R359, R360, R361, R362, R363, R364, R365, R366, R367, R368, R369, R370, R371, R372, R373, R374, R375, R376, R377, R378, R379, R380, R381, R382, R383, R384, R385, R386, R387, R388, R389, R390, R391, R392, R393, R394, R395, R396, R397, R398, R399, R400, R401, R402, R403, R404, R405, R406, R407, R408, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418, R419, R420, R421, R422, R423, R424, R425, R426, R427, R428, R429, R430, R431, R432, R433, R434, R435, R436, R437, R438, R439, R440, R441, R442, R443, R444, R445, R446, R447, R448, R449, R450, R451, R452, R453, R454, R455, R456, R457, R458, R459, R460, R461, R462, R463, R464, R465, R466, R467, R468, R469, R470, R471, R472, R473, R474, R475, R476, R477, R478, R479, R480, R481, R482, R483, R484, R485, R486, R487, R488, R489, R490, R491, R492, R493, R494, R495, R496, R497, R498, R499, R500, R501, R502, R503, R504, R505, R506, R507, R508, R509, R510, R511, R512, R513, R514, R515, R516, R517, R518, R519, R520, R521, R522, R523, R524, R525, R526, R527, R528, R529, R530, R531, R532, R533, R534, R535, R536, R537, R538, R539, R540, R541, R542, R543, R544, R545, R546, R547, R548, R549, R550, R551, R552, R553, R554, R555, R556, R557, R558, R559, R560, R561, R562, R563, R564, R565, R566, R567, R568, R569, R570, R571, R572, R573, R574, R575, R576, R577, R578, R579, R580, R581, R582, R583, R584, R585, R586, R587, R588, R589, R590, R591, R592, R593, R594, R595, R596, R597, R598, R599, R600, R601, R602, R603, R604, R605, R606, R607, R608, R609, R610, R611, R612, R613, R614, R615, R616, R617, R618, R619, R620, R621, R622, R623, R624, R625, R626, R627, R628, R629, R630, R631, R632, R633, R634, R635, R636, R637, R638, R639, R640, R641, R642, R643, R644, R645, R646, R647, R648, R649, R650, R651, R652, R653, R654, R655, R656, R657, R658, R659, R660, R661, R662, R663, R664, R665, R666, R667, R668, R669, R670, R671, R672, R673, R674, R675, R676, R677, R678, R679, R680, R681, R682, R683, R684, R685, R686, R687, R688, R689, R690, R691, R692, R693, R694, R695, R696, R697, R698, R699, R700, R701, R702, R703, R704, R705, R706, R707, R708, R709, R710, R711, R712, R713, R714, R715, R716, R717, R718, R719, R720, R721, R722, R723, R724, R725, R726, R727, R728, R729, R730, R731, R732, R733, R734, R735, R736, R737, R738, R739, R740, R741, R742, R743, R744, R745, R746, R747, R748, R749, R750, R751, R752, R753, R754, R755, R756, R757, R758, R759, R760, R761, R762, R763, R764, R765, R766, R767, R768, R769, R770, R771, R772, R773, R774, R775, R776, R777, R778, R779, R780, R781, R782, R783, R784, R785, R786, R787, R788, R789, R790, R791, R792, R793, R794, R795, R796, R797, R798, R799, R800, R801, R802, R803, R804, R805, R806, R807, R808, R809, R810, R811, R812, R813, R814, R815, R816, R817, R818, R819, R820, R821, R822, R823, R824, R825, R826, R827, R828, R829, R830, R831, R832, R833, R834, R835, R836, R837, R838, R839, R840, R841, R842, R843, R844, R845, R846, R847, R848, R849, R850, R851, R852, R853, R854, R855, R856, R857, R858, R859, R860, R

The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

UR-14:SWITCHING REGULATOR (FOR UC)



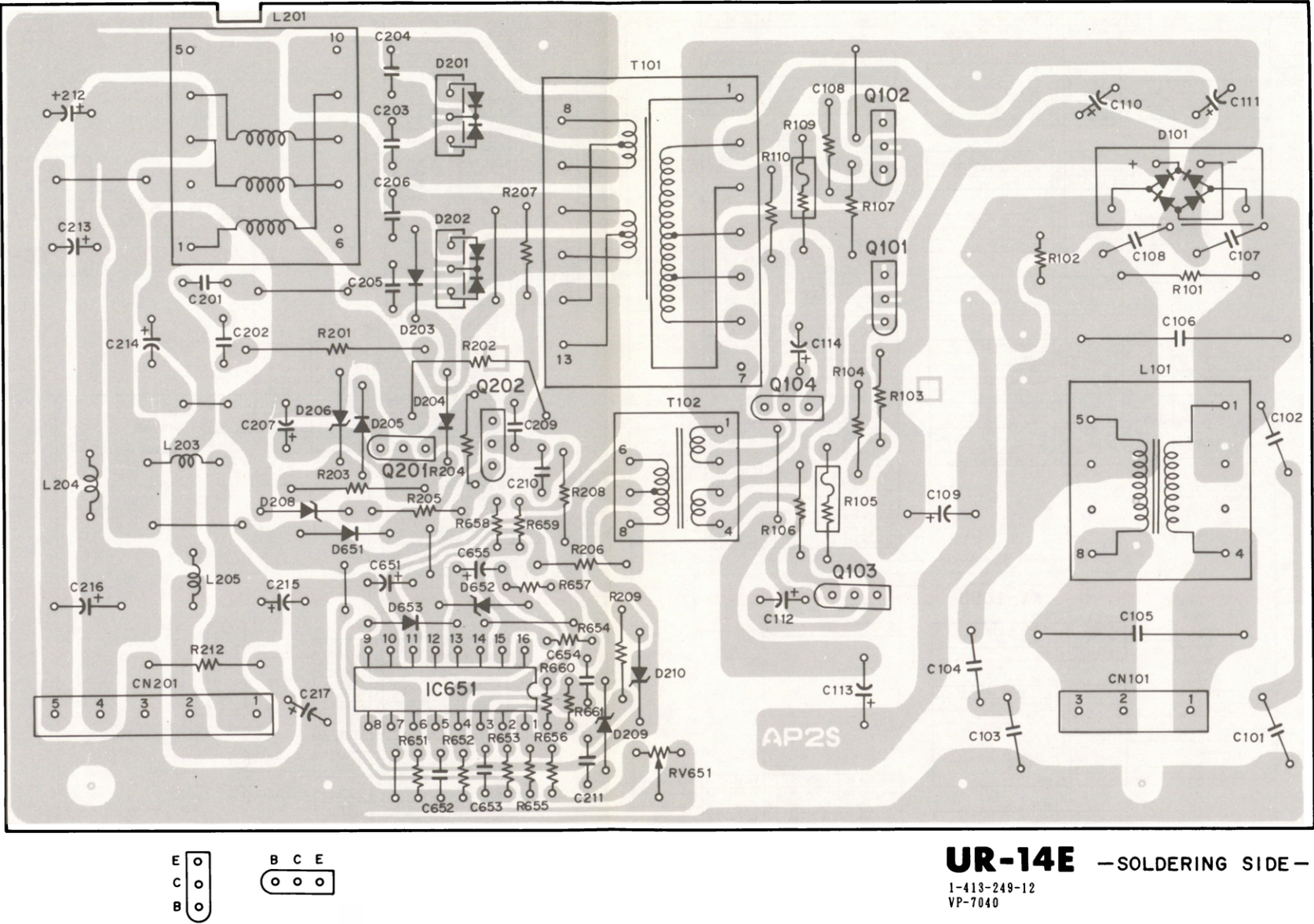
UR-14E;SWITCHING REGULATOR (FOR EK)

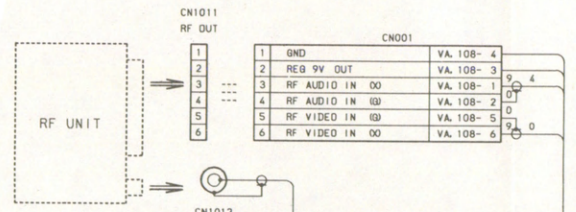
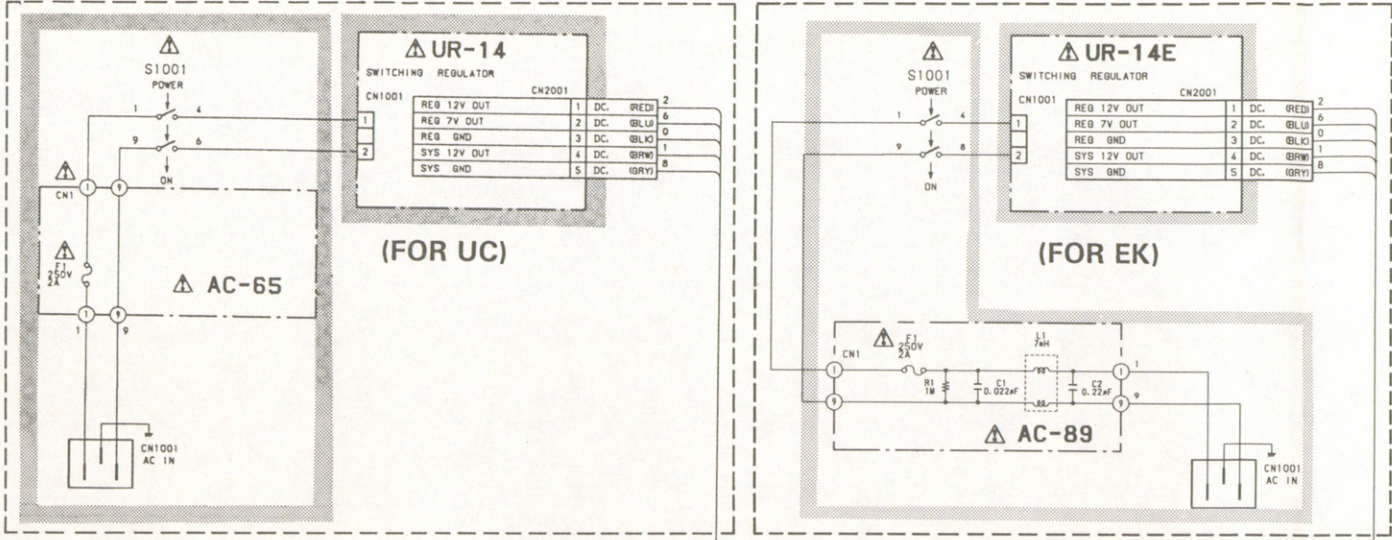


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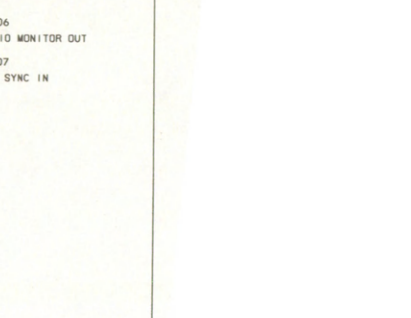
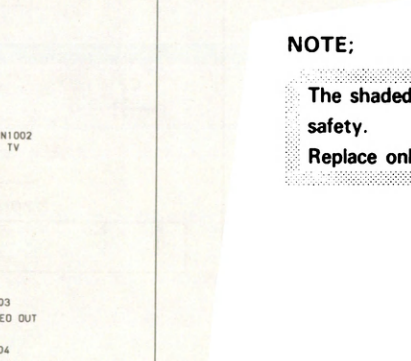
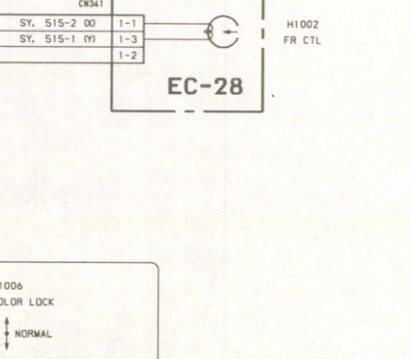
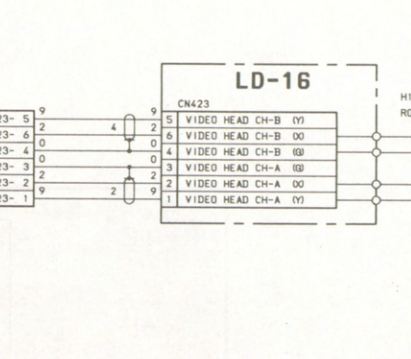
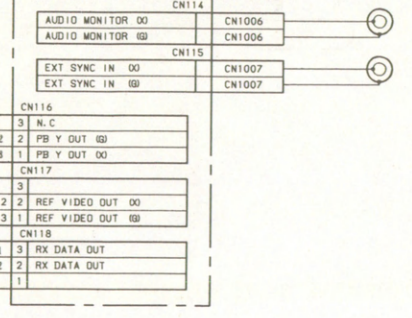
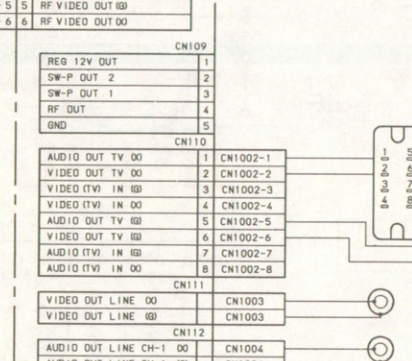
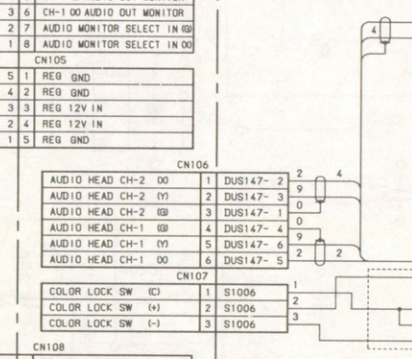
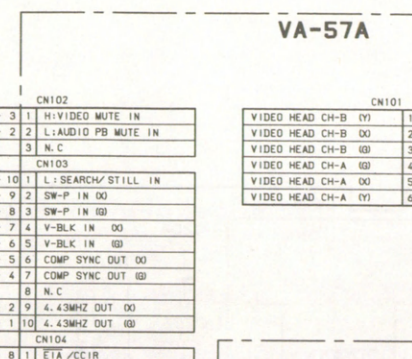
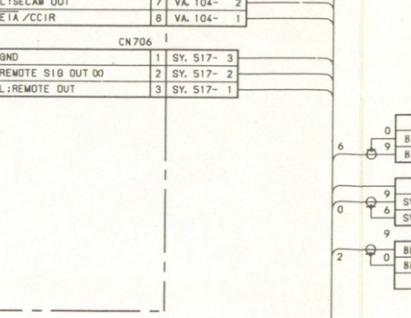
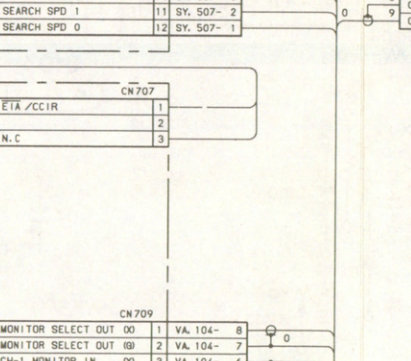
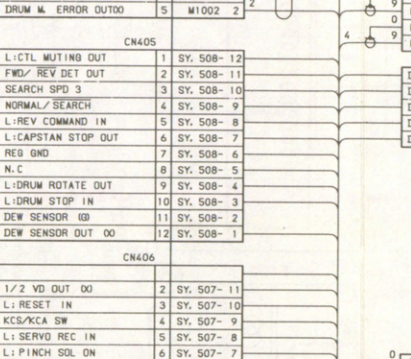
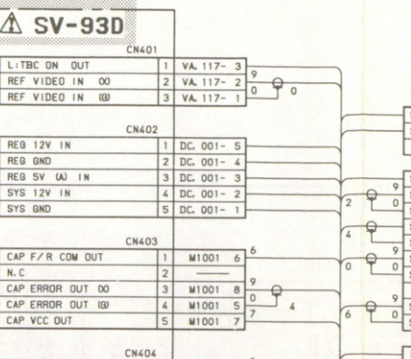
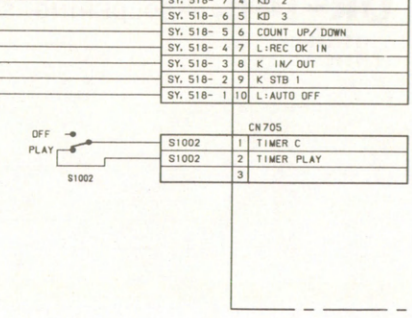
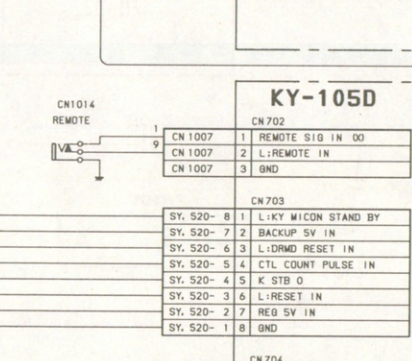
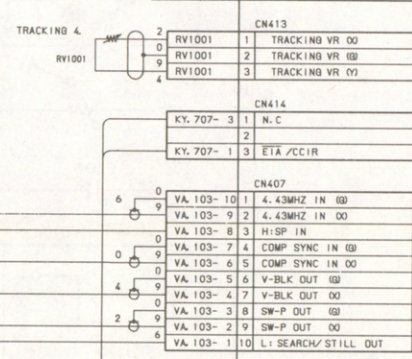
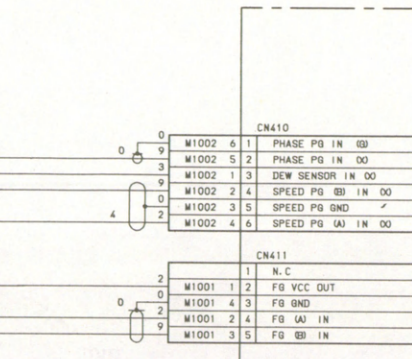
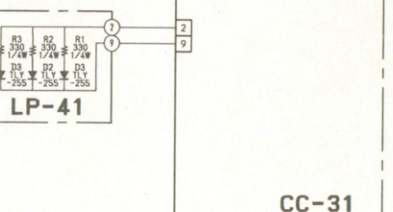
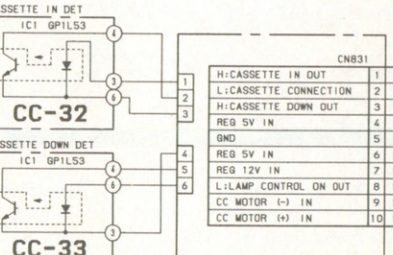
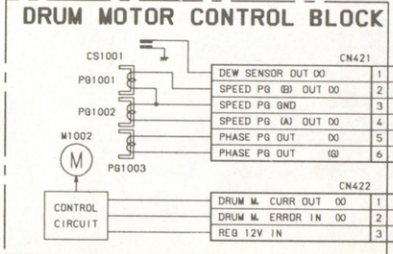
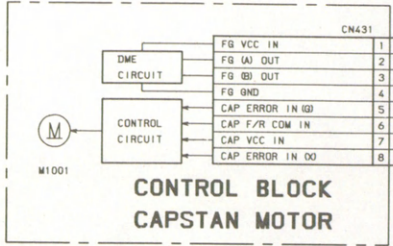
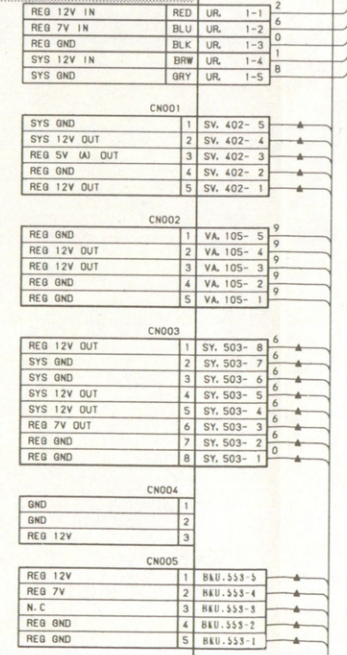
The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

UR-14E;SWITCHING REGULATOR (FOR EK).





DC-31B/DC-31C (FOR UC)(FOR EK)

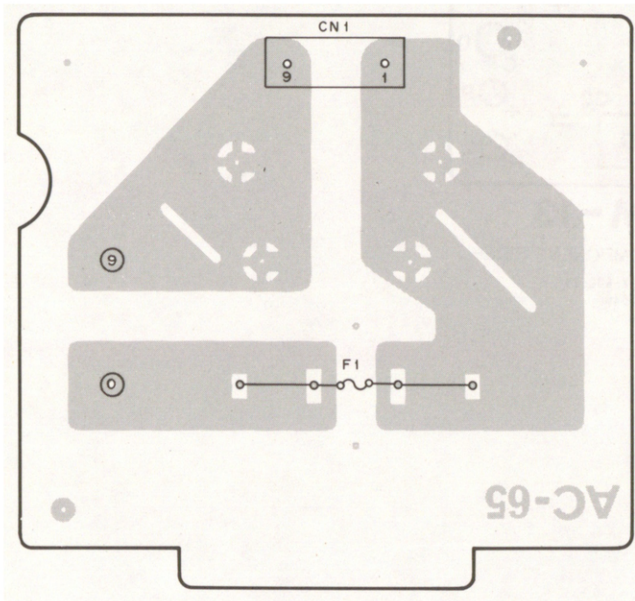


NOTE:
The shaded and A-marked components are critical to safety.
Replace only with same components as specified.

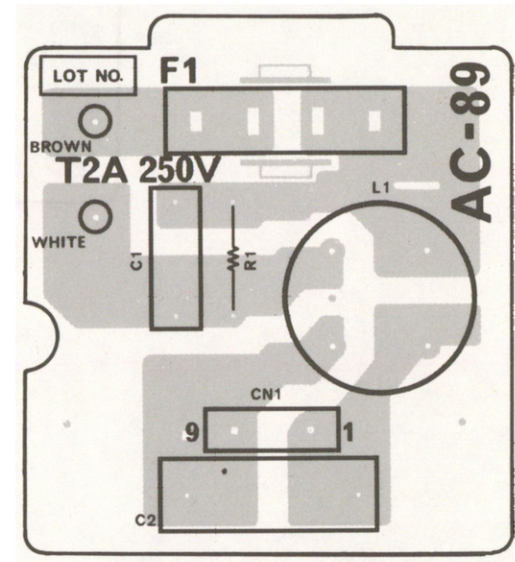
AC-65;AC INPUT (FOR UC)

AC-89;AC INPUT (FOR EK)

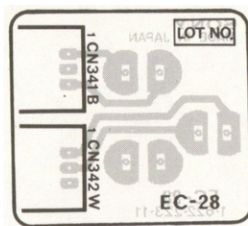
EC-28;CTL HEAD



AC-65 - SOLDERING SIDE -
1-618-591-11
VP-7040



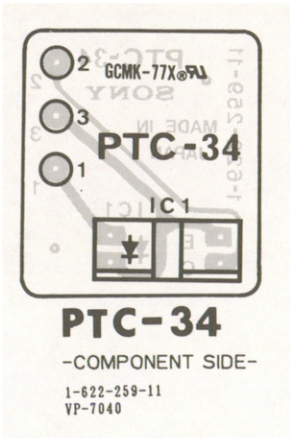
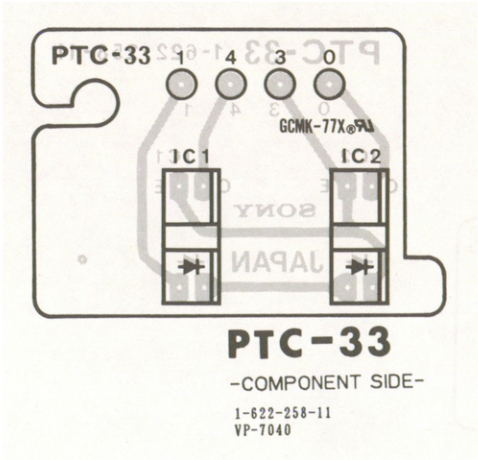
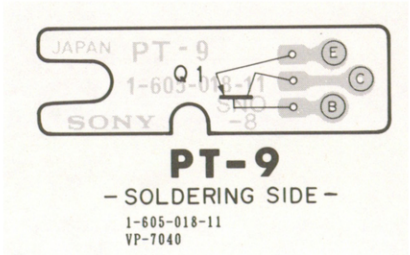
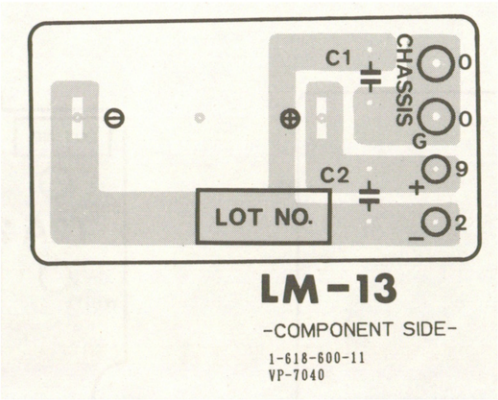
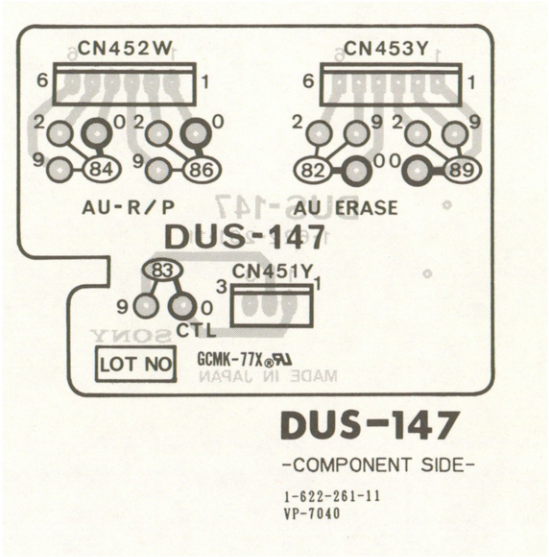
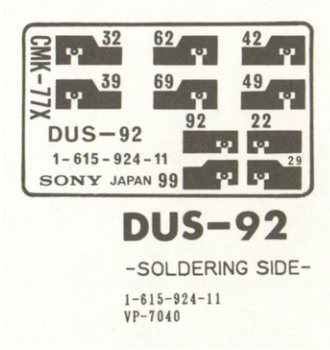
AC-89
-COMPONENT SIDE-
1-822-786-11
VP-7040

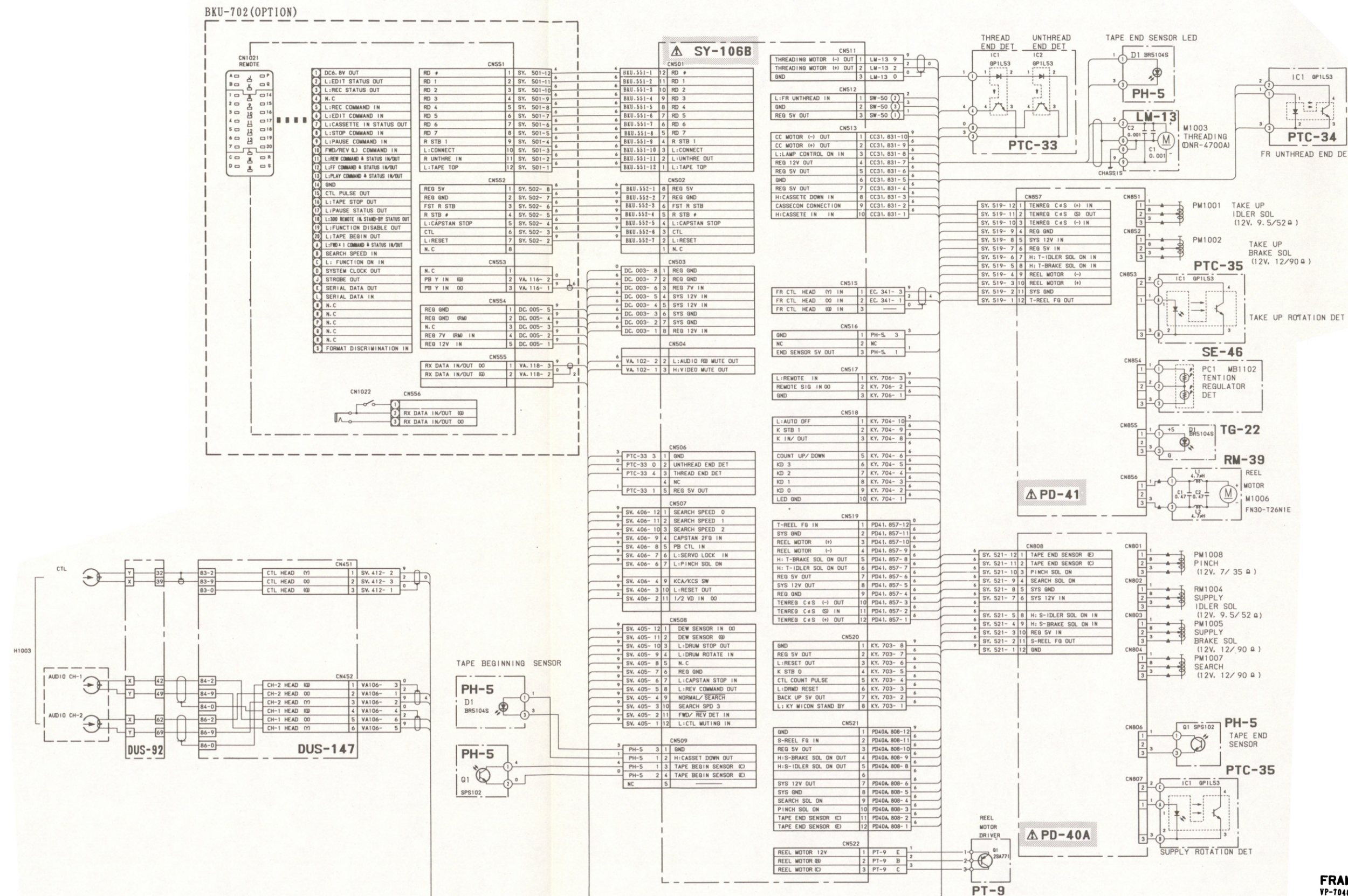


EC-28
-COMPONENT SIDE-
1-822-223-11
VP-7040

DUS-92;AUDIO/CTL HEAD
DUS-147;AUDIO/CTL HEAD
PT-9;REEL MOTOR DRIVER

LM-13;THREADING MOTOR
PTC-33; THREADEND / UNTHREADEND DETECTOR
PTC-34; FR / UNTHREADEND DETECTOR





NOTE;

The shaded and ⚠-marked components are critical to safety.


Replace only with same components as specified.

SECTION 15

SPARE PARTS AND FIXTURE

15-1. PARTS INFORMATION

(1)

The shaded and -marked components are critical to safety.

Replace only with same components as specified.

(2) Replacement Parts supplied from the Sony Parts Center will sometimes have a different shape from the original parts. This is due to "improved parts and/or engineering changes" or "standardization of genuine parts".

This manual's exploded views and electrical spare parts list indicate the part numbers of "the standardized genuine parts at the present". Regarding engineering part changes by the engineering department, refer to Sony service bulletins and service manual supplements.

(3) The parts marked with "s" in the SP column of the exploded views and electrical spare parts lists are normally stocked for replacement purposes. The parts marked with "o" in the SP column are not normally required for routine service work. Orders for parts marked with "o" will be processed, but allow for additional delivery time.

(4) Items with no part number and/or no description are not stocked because they are seldom required for routine service.

(5) (T) after a spring description is shown on the exploded views in order to indicate the number of spring turns required for the use. (Example) Spring, tension (24T); This spring must be cut at its 24th turn for actual use.

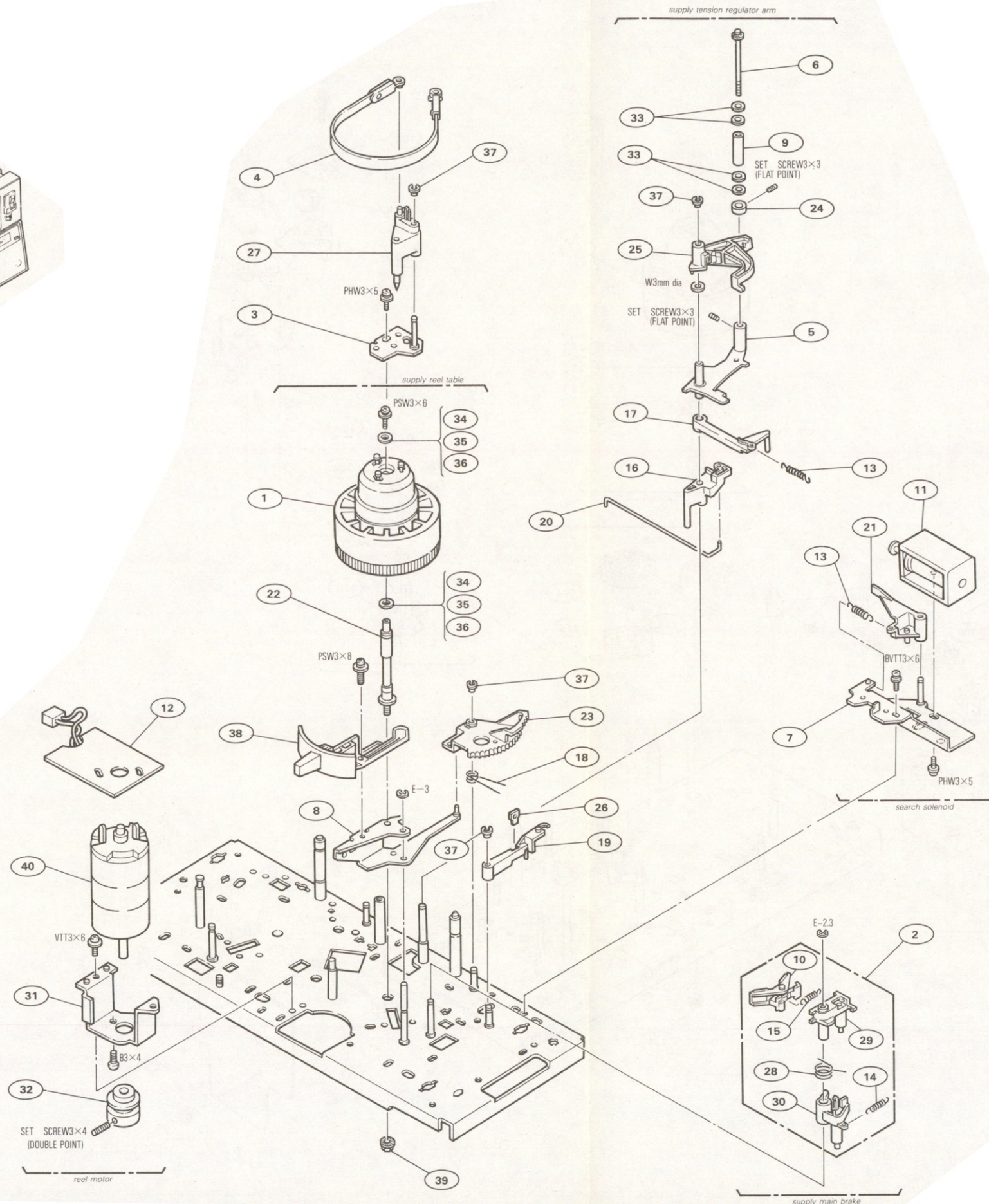
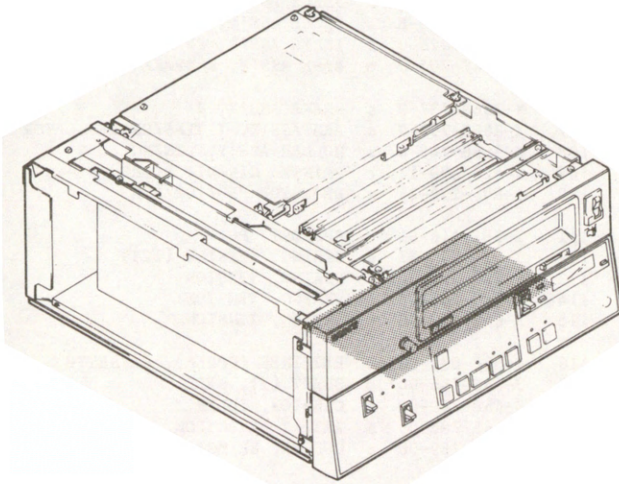
15-2. EXPLODED VIEW

. Exploded views are composed of the following blocks.

- (1) Reel Chassis (1), Supply Side
 - S Reel Table
 - S Tension Regulator Arm
 - Search Solenoid
 - S Main Brake
 - Reel Motor
- (2) Reel Chassis (2), Take-up Side
 - T Reel Table
 - FF/REW Idler
 - T Main brake
 - T Tension Regulator Arm
 - R Brake
- (3) Reel Chassis (3), Back Side
 - S Idler Solenoid
 - T Idler Solenoid
 - FF/REW Pulley
 - S Brake Solenoid
 - T Brake Solenoid
- (4) Threading Ring Block
 - Threading Ring
 - Gear Box
 - T Correction Guide
 - Tape Beginning Sensor
 - FR Detector
- (5) Threading Arm
 - T Drawer Arm
 - S Drawer Arm
 - S Drawer Roller
 - Drawer Lever
- (6) Drum and Capstan Blocks
 - Head Drum
 - Capstan Motor
 - Audio/ CTL Head
 - Tape Guides

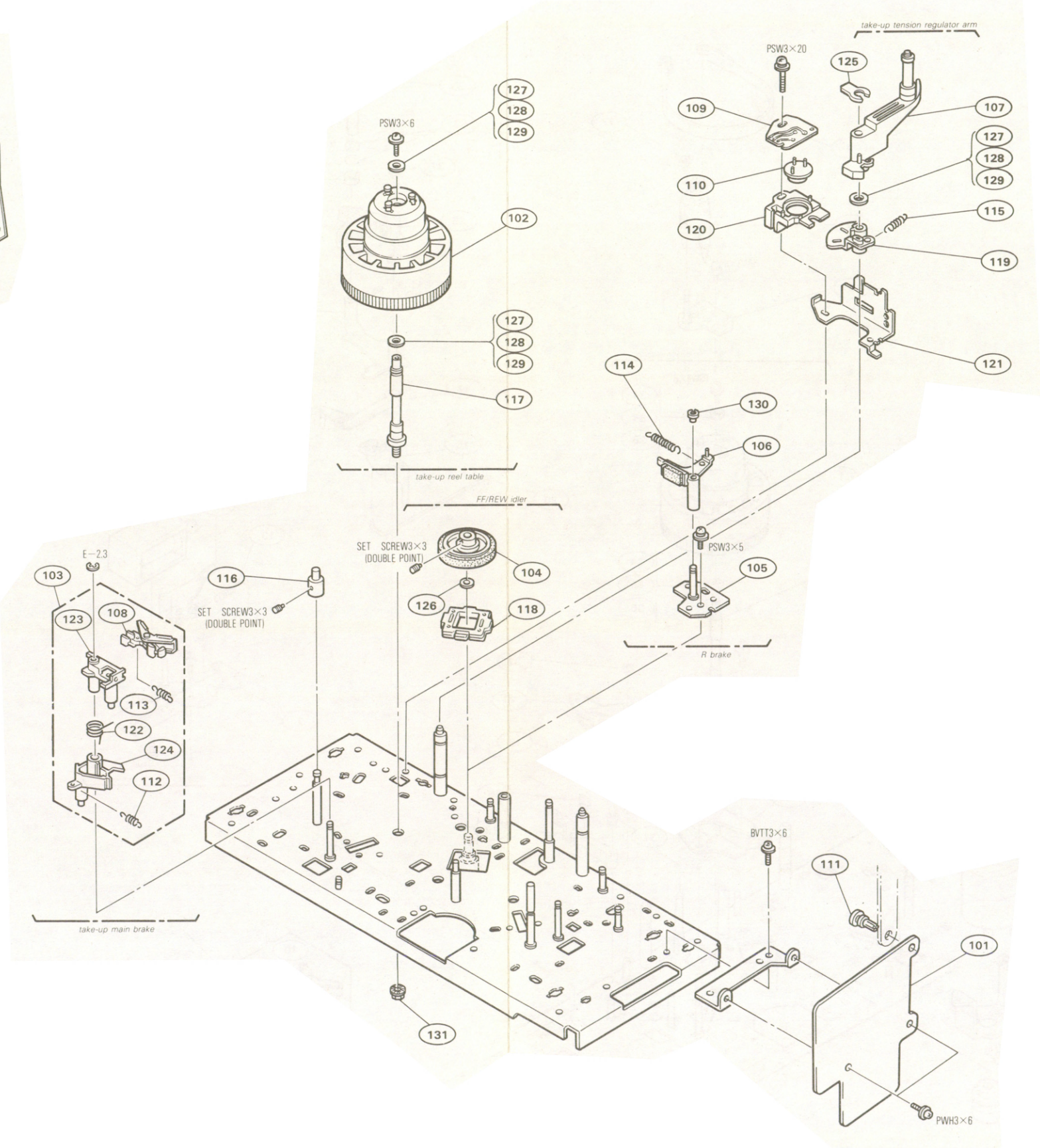
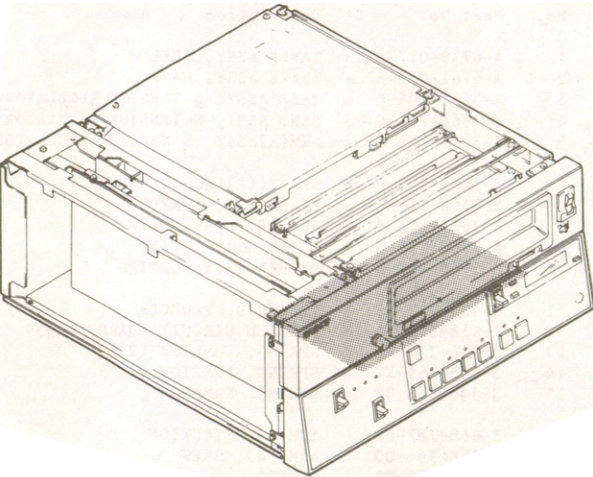
- (7) Erase Head Base
 - Erase Head Base
 - S Guard
- (8) Pinch Lever and Pinch Solenoid Blocks
 - Pinch Lever
 - Pinch Roller Pre-set Cam
 - Pinch Solenoid
- (9) Cassette-up Compartment Block
- (10) Function Control
 - Function Control Board
- (11) Front Panel Block
 - Ornamental Front Panel
 - Key Top
- (12) Chassis Block (1), Left Side
 - Printed Circuit Boards
- (13) Chassis Block (2), Back Side
 - Printed Circuit Boards
 - Connector Panel for Video Signal
- (14) Level Control Panel
 - Meter Panel
 - Headphone Block
- (15) Switching Regulator
- (16) Connector Panel
- (17) Chassis Block (3), Bottom
 - Printed Circuit Boards
- (18) Ornamental Panel Block
 - U Case
 - Bottom Plate

REEL CHASSIS (1), SUPPLY SIDE



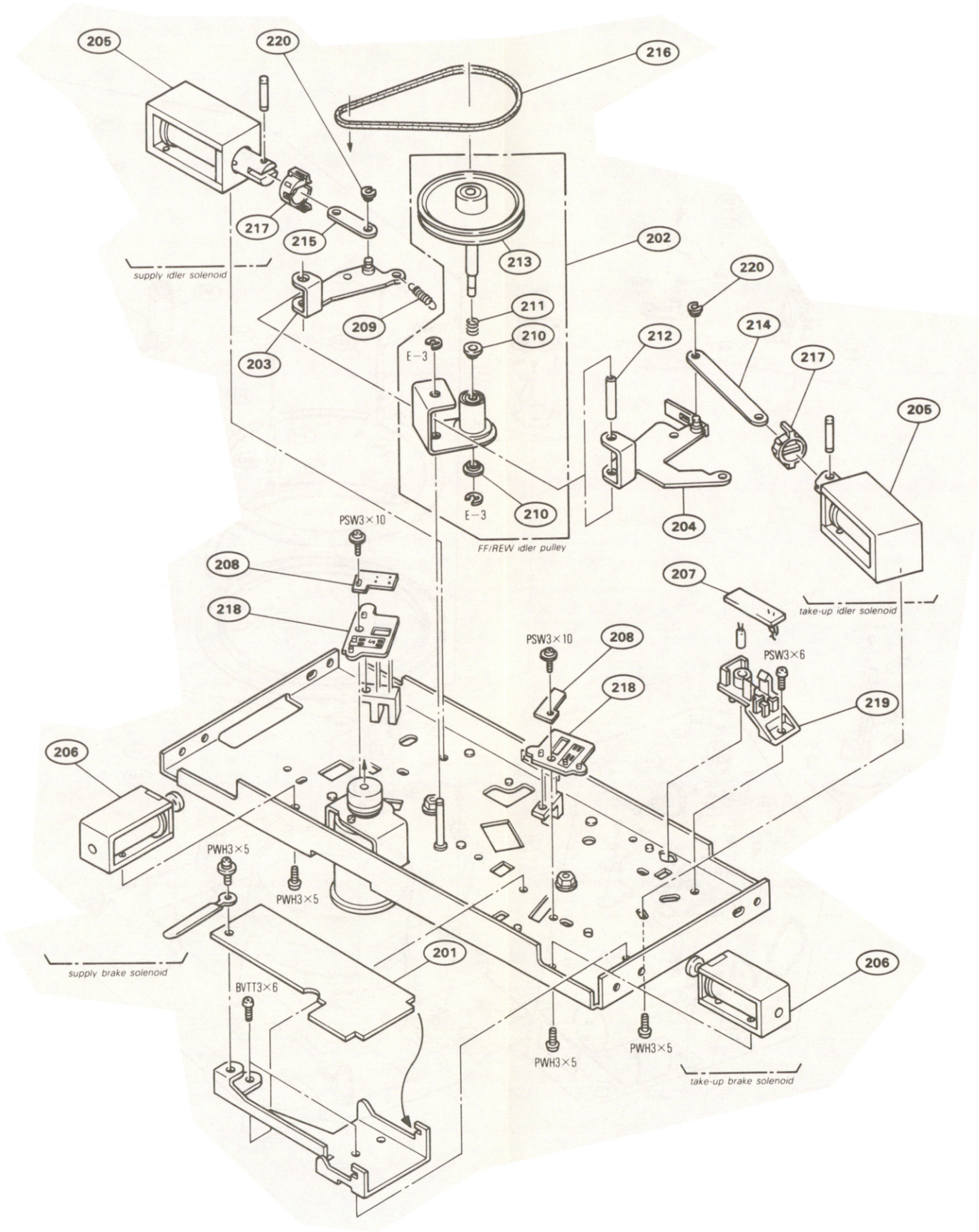
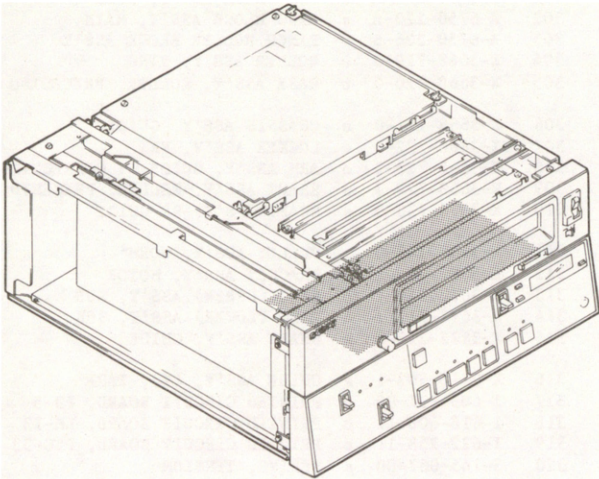
No.	Part No.	SP	Description
1	A-6739-017-A	•	TABLE ASSY, REEL
2	A-6741-038-B	•	BRAKE ASSY, MAIN
3	X-3668-706-0	•	BASE ASSY, S TENSION REGULATOR
4	X-3668-707-0	•	BAND ASSY, S TENSION REGULATOR
5	X-3668-708-0	•	ARM(A) ASSY, S TENSION REGULATOR
6	X-3668-709-0	•	SHAFT (1) ASSY, ROLLER
7	X-3668-717-0	•	BASE ASSY, SEARCH
8	X-3668-725-0	•	ARM (C) ASSY, SKEW
9	X-3668-727-0	•	GUIDE ASS'Y, TAPE
10	X-3668-749-0	•	HOLDER ASSY, LINING
11	1-454-417-31	•	SOLENOID, PLUNGER
12	1-618-873-11	•	PRINTED CIRCUIT BOARD, RM-39
13	3-534-238-XX	•	SPRING, TENSION (23T)
14	3-535-369-XX	•	SPRING, TENSION (12T)
15	3-548-124-00	•	SPRING, TENSION
16	3-668-787-02	•	ARM, S DETECTION
17	3-668-794-00	•	ARM (A), SKEW
18	3-668-795-00	•	SPRING
19	3-668-797-00	•	ARM, SKEW LOCK
20	3-668-804-00	•	LINK, DETECTION TENSION
21	3-668-808-00	•	ARM, FWD, SEARCH
22	3-668-827-00	•	SHAFT (S), REEL
23	3-668-835-00	•	ARM (B), SKEW
24	3-668-874-00	•	FLANGE (1), LOWER
25	3-668-936-00	•	ARM (B), S TENSION REGULATOR
26	3-668-937-00	•	CLAW, SKEW LOCK
27	3-668-939-00	•	ARM, BAND LOCK
28	3-668-966-00	•	SPRING
29	3-668-970-00	•	ARM, BRAKE
30	3-668-971-00	•	ARM, BRAKE RELEASE
31	3-672-743-01	•	BRACKET, MOTOR
32	3-672-744-01	•	PULLEY (R), MOTOR
33	3-701-438-01	•	WASHER, POLY 2.5MM DIA., 0.25T
34	3-701-444-01	•	WASHER, POLY 6MM DIA., 0.13T
35	3-701-444-11	•	WASHER, POLY 6MM DIA., 0.25T
36	3-701-444-21	•	WASHER, POLY 6MM DIA., 0.50T
37	3-703-074-00	•	CAP 3, SHAFT
38	3-718-337-01	•	LEVER, SKEW
39	4-304-749-00	•	NUT, FLANGE
40	8-835-178-01	•	MOTOR, DC (FN30-T26N1E)

REEL CHASSIS (2), TAKE-UP SIDE



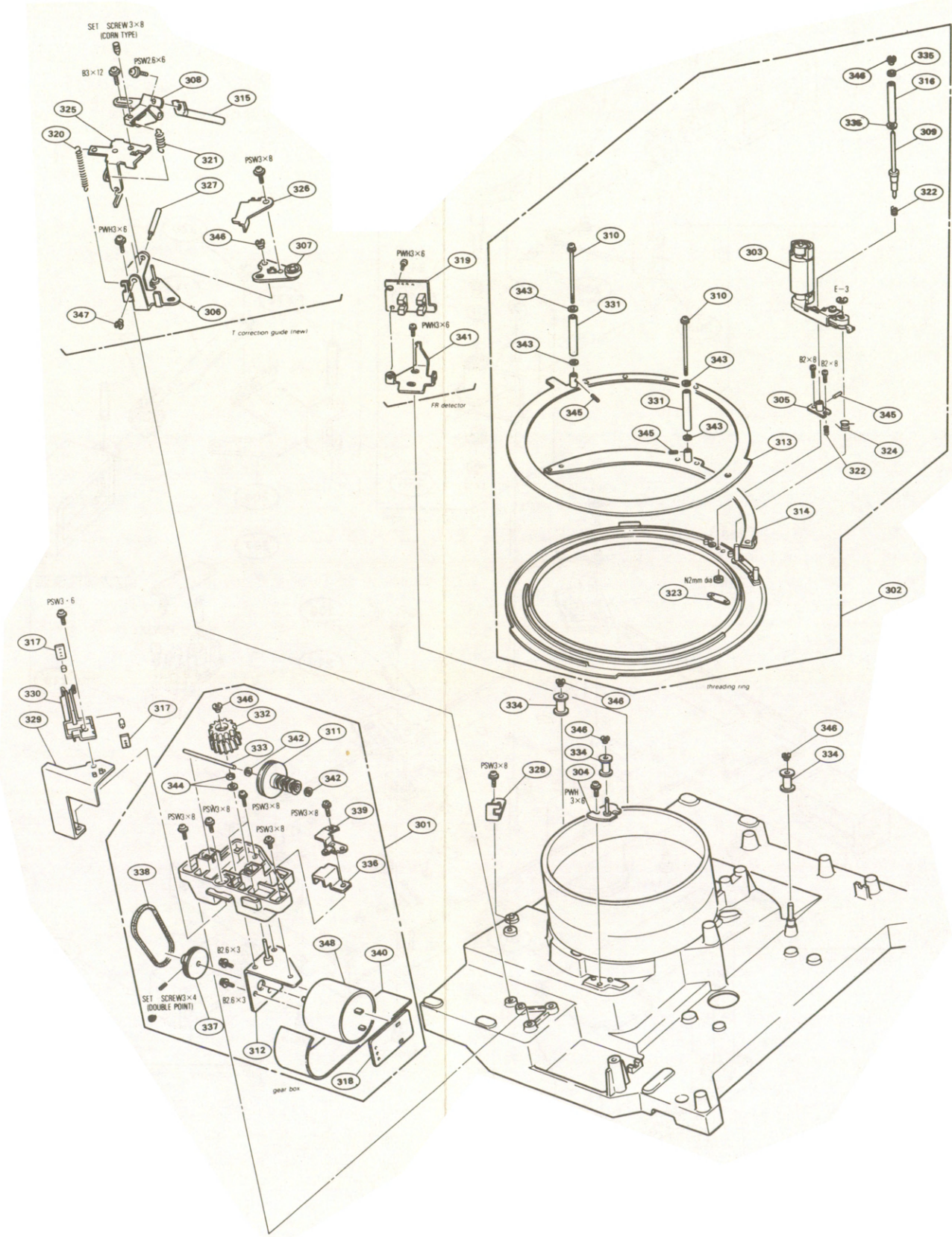
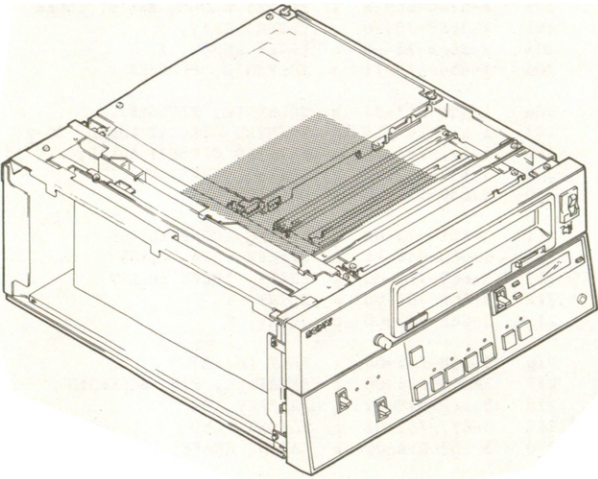
No.	Part No.	SP	Description
101	A-6725-571-A	o	MOUNTED CIRCUIT BOARD, PD-40A
102	A-6739-017-A	s	TABLE ASS'Y, REEL
103	A-6741-038-B	s	BRAKE ASS'Y, MAIN
104	X-3646-026-0	s	IDLER ASS'Y, FF
105	X-3668-705-0	o	BASE ASS'Y, R BRAKE
106	X-3668-737-0	s	BRAKE ASS'Y, R
107	X-3668-738-0	s	ARM ASS'Y, T TENSION REGULATOR
108	X-3668-749-0	s	HOLDER ASS'Y, LINING
109	1-618-599-11	o	PRINTED CIRCUIT BOARD, SE-46
110	1-806-232-21	s	DETECTOR MB-1102/S.N
111	2-382-416-01	o	SUPPORT, PC
112	3-535-369-XX	s	SPRING, TENSION (12T)
113	3-548-124-00	s	SPRING, TENSION
114	3-549-861-00	s	SPRING, TENSION
115	3-642-427-00	s	SPRING, TENSION
116	3-668-031-00	o	RETAINER (UPPER), CASSETTE
117	3-668-766-00	o	SHAFT (T), REEL
118	3-668-780-00	o	CUSHION, IDLER
119	3-668-788-00	s	ART, T DETECTION
120	3-668-789-00	o	HOLDER, BRIDGE, PHOTO
121	3-668-798-00	o	STOPPER, T TENSION REGULATOR
122	3-668-966-00	s	SPRING
123	3-668-970-00	o	ARM, BRAKE
124	3-668-971-00	o	ARM, BRAKE RELEASE
125	3-672-708-00	o	STOPPER, T TENSION REGULATOR
126	3-701-441-21	s	WASHER, POLY 4MM DIA., 0.50T
127	3-701-444-01	s	WASHER, POLY 6MM DIA., 0.13T
128	3-701-444-11	s	WASHER, POLY 6MM DIA., 0.25T
129	3-701-444-21	s	WASHER, POLY 6MM DIA., 0.50T
130	3-703-074-00	s	CAP 3, SHAFT
131	4-304-749-00	o	NUT, FLANGE

REEL CHASSIS (3), BACK SIDE



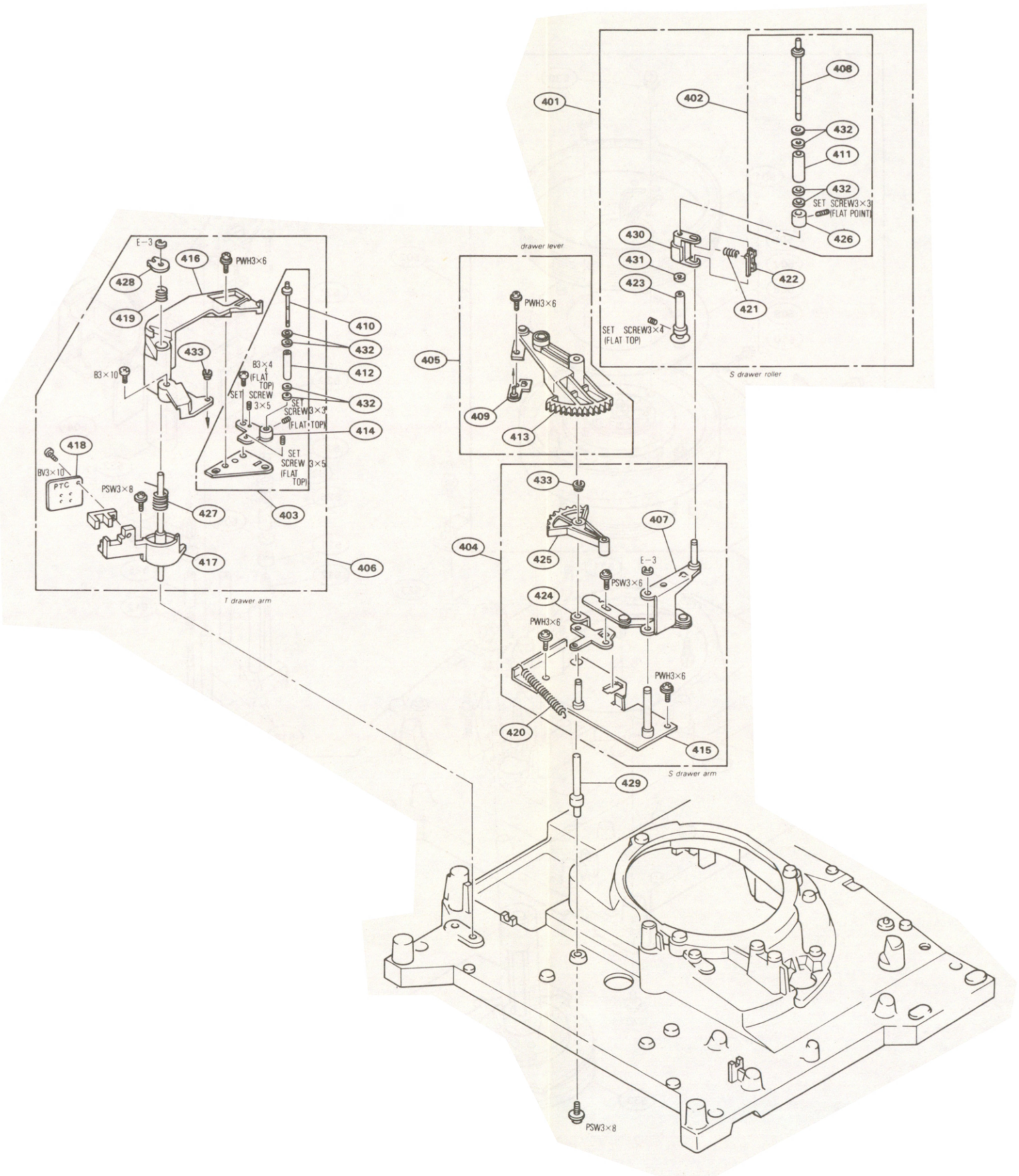
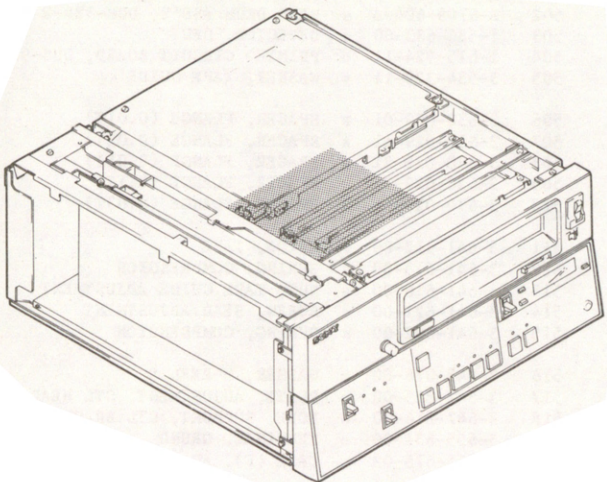
No.	Part No.	SP	Description
201	A-6725-570-A	o	MOUNTED CIRCUIT BOARD, PD-41
202	A-6740-069-B	s	PULLEY BLOCK, ASS'Y, IDLER
203	X-3668-703-0	o	LEVER ASS'Y, S
204	X-3668-704-0	o	LEVER ASS'Y, T
205	1-454-415-11	s	SOLENOID, PLUNGER
206	1-454-417-31	s	SOLENOID, PLUNGER
207	1-618-597-11	o	PRINTED CIRCUIT BOARD, TG-22
208	1-622-218-11	o	PRINTED CIRCUIT BOARD, PTC-35
209	3-437-452-00	s	SPRING, TENSION
210	3-650-512-00	s	COLLAR, (A)
211	3-651-572-00	s	SPRING, COMPRESSION
212	3-668-048-11	o	SPACER (DIA. 4x20)
213	3-668-772-00	s	SHAFT, IDLER PULLEY
214	3-668-781-00	o	JOINT, T
215	3-668-782-00	o	JOINT, S
216	3-668-785-00	s	BELT (67x2)
217	3-668-826-00	s	RETAINER, PIN, SOLENOID
218	3-668-828-02	o	BRACKET, PS
219	3-672-752-01	o	HOLDER, LED
220	3-703-074-00	s	CAP 3, SHAFT

THREADING RING BLOCK



No.	Part No.	SP	Description
301	A-6750-219-A	s	BOX BLOCK ASS'Y, GEAR
302	A-6750-220-A	s	RING BLOCK ASS'Y, MAIN
303	A-6750-226-B	s	PINCH ROLLER BLOCK ASS'Y
304	X-3668-719-0	o	ROLLER ASS'Y, RING
305	X-3668-720-0	o	BASE ASS'Y, ROLLER, PRECEDING
306	X-3668-721-0	o	CHASSIS ASS'Y, GUIDE
307	X-3668-722-0	s	LOCKER ASS'Y, FR
308	X-3668-723-2	o	ARM ASS'Y, GUIDE, T CORRECTION
309	X-3668-724-3	s	SHAFT ASS'Y, ROLLER, PRECEDING
310	X-3668-733-0	s	SHAFT ASS'Y, SR GUIDE
311	X-3668-743-0	s	PULLEY ASS'Y, WORM
312	X-3672-704-1	o	BRACKET ASS'Y, MOTOR
313	X-3672-710-1	o	RING (UPPER) ASS'Y, SUB
314	X-3672-711-1	o	RING (LOWER) ASS'Y, SUB
315	X-3672-718-2	s	SHAFT ASS'Y, GUIDE
316	X-3718-303-1	s	GUIDE ASS'Y, (T), TAPE
317	1-603-737-00	o	PRINTED CIRCUIT BOARD, PH-5
318	1-618-600-11	o	PRINTED CIRCUIT BOARD, LM-13
319	1-622-258-11	o	PRINTED CIRCUIT BOARD, PTC-33
320	3-143-067-00	s	SPRING, TENSION
321	3-437-289-00	s	SPRING, TENSION
322	3-634-196-00	s	SPRING
323	3-668-743-00	o	NUT, PLATE, ROLLER, PRECEDING
324	3-668-745-00	s	SPRING
325	3-668-749-02	o	ARM (A), GUIDE, T CORRECTION
326	3-668-753-00	o	PLATE, ADJUSTMENT, FR LOCKER
327	3-668-754-00	o	SHAFT, GUIDE ARM, T CORRECTION
328	3-668-755-00	o	PLATE, STOPPER SR
329	3-668-900-00	o	BRACKET, T SENSOR
330	3-668-901-00	s	HOLDER, T PHOTO
331	3-668-919-00	s	ROLLER, SR GUIDE
332	3-668-947-00	s	PINION, L
333	3-668-948-00	o	SHAFT WORM
334	3-668-963-00	s	ROLLER, RING
335	3-669-926-01	s	WASHER (3), THRUST
336	3-669-960-00	o	RETAINER, SHAFT
337	3-672-736-01	s	PULLEY, LM
338	3-672-737-01	s	BELT SQUARE
339	3-672-738-01	o	PLATE GROUND SLED
340	3-672-739-01	o	BELT, LM SHIELD
341	3-672-790-01	o	BRACKET, FR DETECTION
342	3-701-437-21	s	WASHER, POLY 2MM DIA., 0.50T
343	3-701-438-11	s	WASHER, POLY 2.5MM DIA., 0.25T
344	3-701-439-21	s	WASHER, POLY 3MM DIA., 0.50T
345	3-701-505-00	s	SET SCREW, DUBLE POINT 3x3
346	3-703-074-00	s	CAP 3, SHAFT
347	3-703-075-00	s	CAP 2, SHAFT
348	1-541-376-11	s	MOTOR, DC (DNR-4700A)

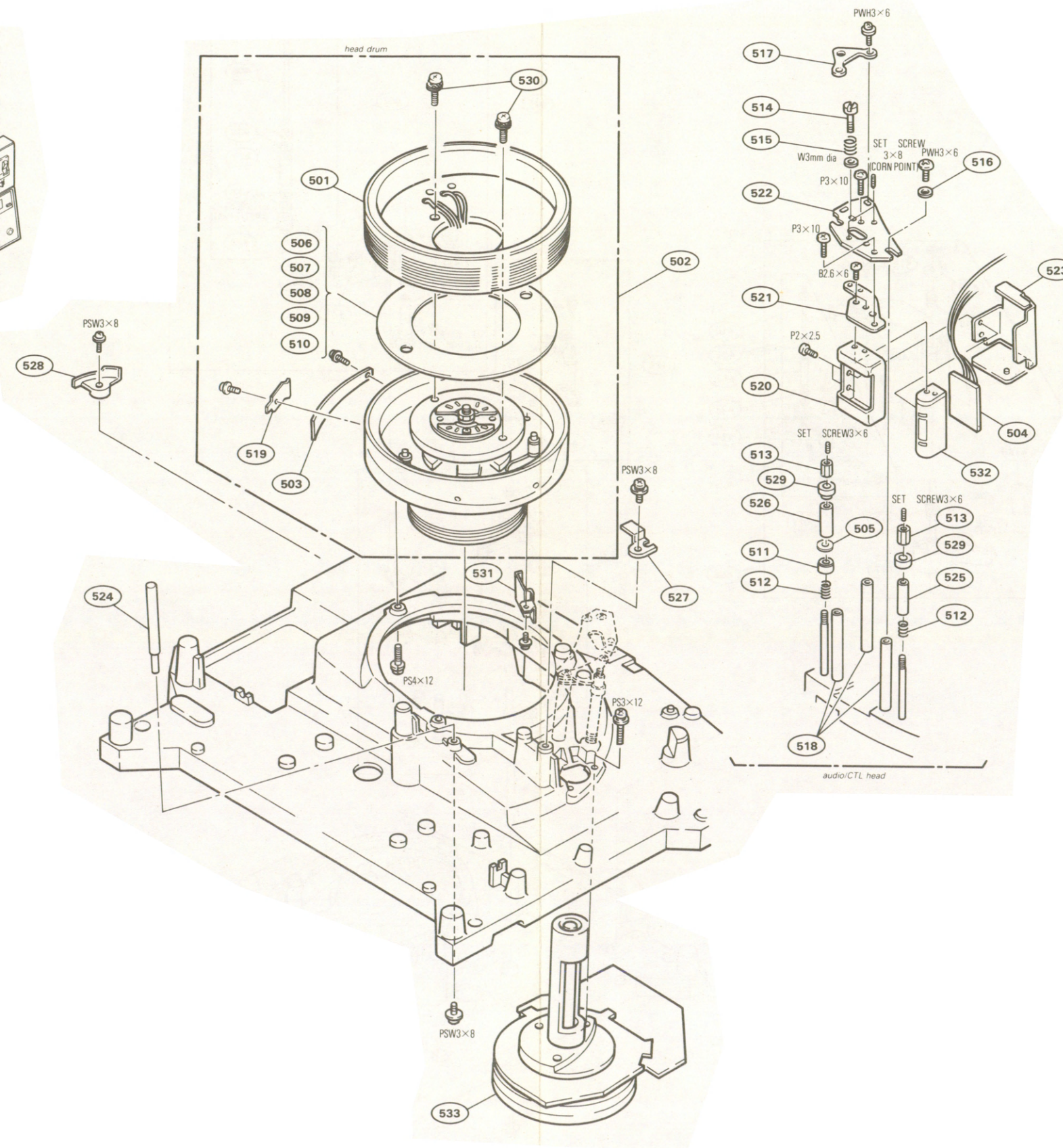
THREADING ARM



No.	Part No.	SP	Description
401	A-6746-021-C	s	ROLLER BLOCK ASS'Y, S DRAWER
402	A-6746-034-A	s	ROLLER BLOCK ASS'Y, (2) DRAWER
403	A-6746-045-A	s	ROLLER BLOCK ASS'Y, T GUIDE
404	A-6750-201-A	o	ARM BLOCK ASS'Y, S DRAWER
405	A-6750-202-A	o	LEVER BLOCK ASS'Y, DRAWER
406	A-6750-218-A	o	ARM BLOCK ASS'Y, T DRAWER
407	X-3668-711-0	o	ARM ASS'Y, S DRAWER
408	X-3668-712-3	s	SHAFT (2) ASS'Y, ROLLER
409	X-3668-713-0	o	LINK (B) ASS'Y, DRIVING
410	X-3668-716-0	s	SHAFT (3) ASS'Y, ROLLER
411	X-3668-718-0	s	GUIDE ASS'Y, TAPE
412	X-3668-727-0	o	GUIDE ASS'Y, TAPE
413	X-3668-729-0	s	LEVER ASS'Y, DRAWER
414	X-3672-705-1	o	PLATE ASS'Y, GUIDE, T
415	X-3672-706-1	o	BASE ASS'Y, S DRAWER ARM
416	X-3672-708-1	o	ARM ASS'Y, T DRAWER
417	X-3718-305-1	o	RETAINER ASS'Y, ARM, T DRAWER
418	1-622-259-11	o	PRINTED CIRCUIT BOARD, PTC-34
419	3-534-854-00	s	SPRING, COMPRESSION
420	3-540-506-00	s	SPRING, TENSION
421	3-644-718-00	s	SPRING, COMPRESSION
422	3-668-718-00	s	RETAINER, SPRING, S DRAWER
423	3-668-719-00	s	HOLDER (L), S GUIDE
424	3-668-720-00	o	LIMITER, S DRAWER
425	3-668-721-00	s	ARM, S DRIVING
426	3-668-724-00	o	FLANGE (2), LOWER
427	3-668-734-00	o	SPRING
428	3-668-735-00	s	RETAINER, SPRING
429	3-668-760-00	s	SHAFT, DRAWER LEVER
430	3-668-833-00	s	HOLDER (M), GUIDE, S
431	3-669-946-00	s	RING (P4), O
432	3-701-438-01	s	WASHER, POLY 2.5MM DIA., 0.13T
433	3-703-074-00	s	CAP 3, SHAFT

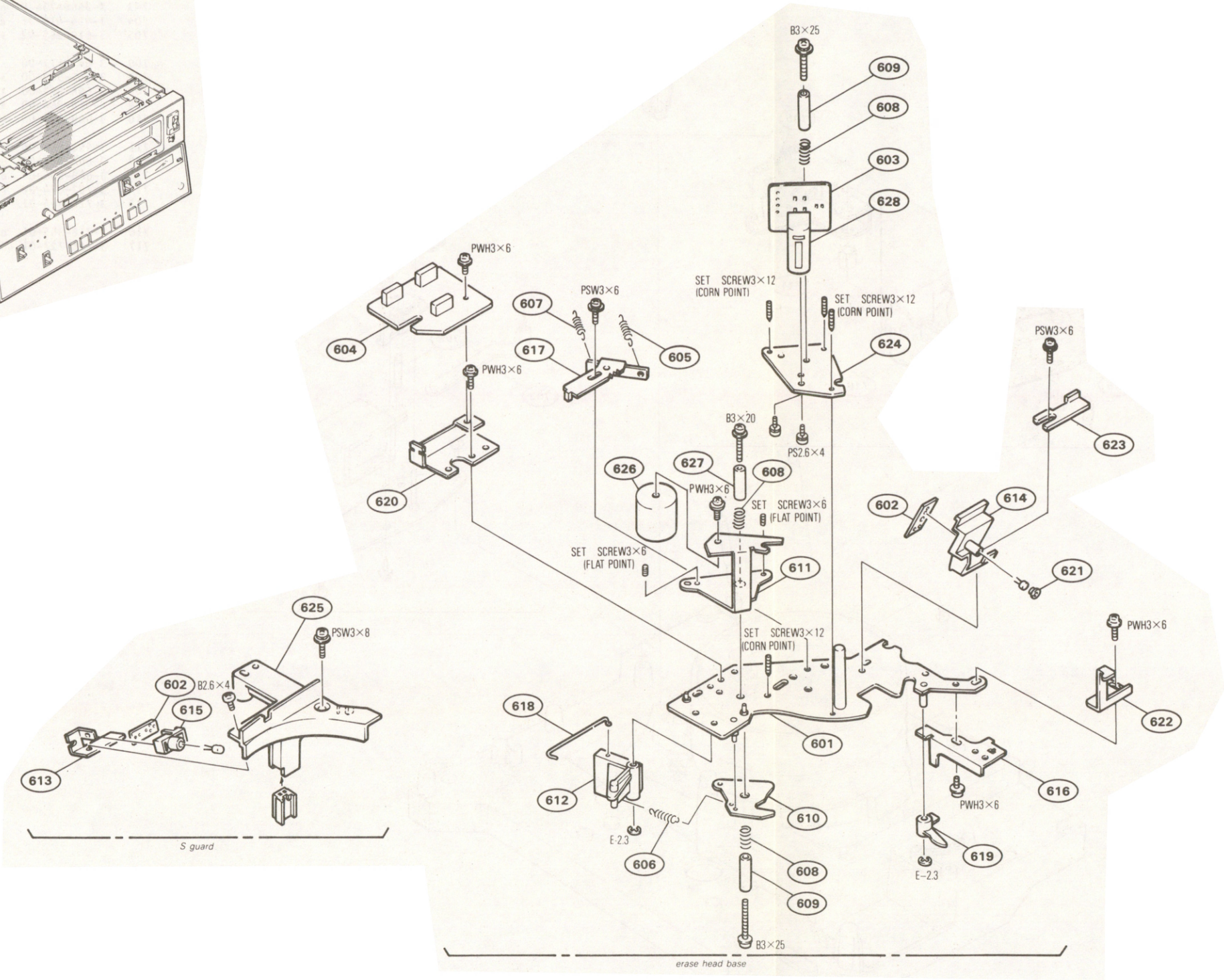
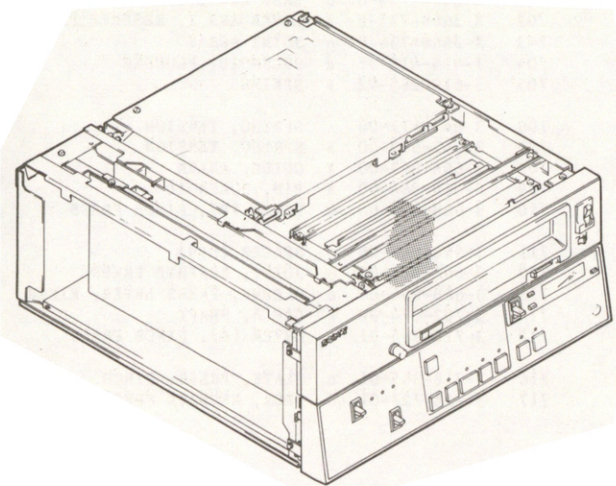
DRUM AND CAPSTAN BLOCKS

A detailed line drawing of the Pioneer 1000 turntable. The view is from a three-quarter angle, showing the top surface and the front face. The top surface features a dust cover and a clear dust cap. The front face includes a control panel with a digital display, several buttons, and a volume knob. The turntable is shown without its dust cover, revealing the internal components.



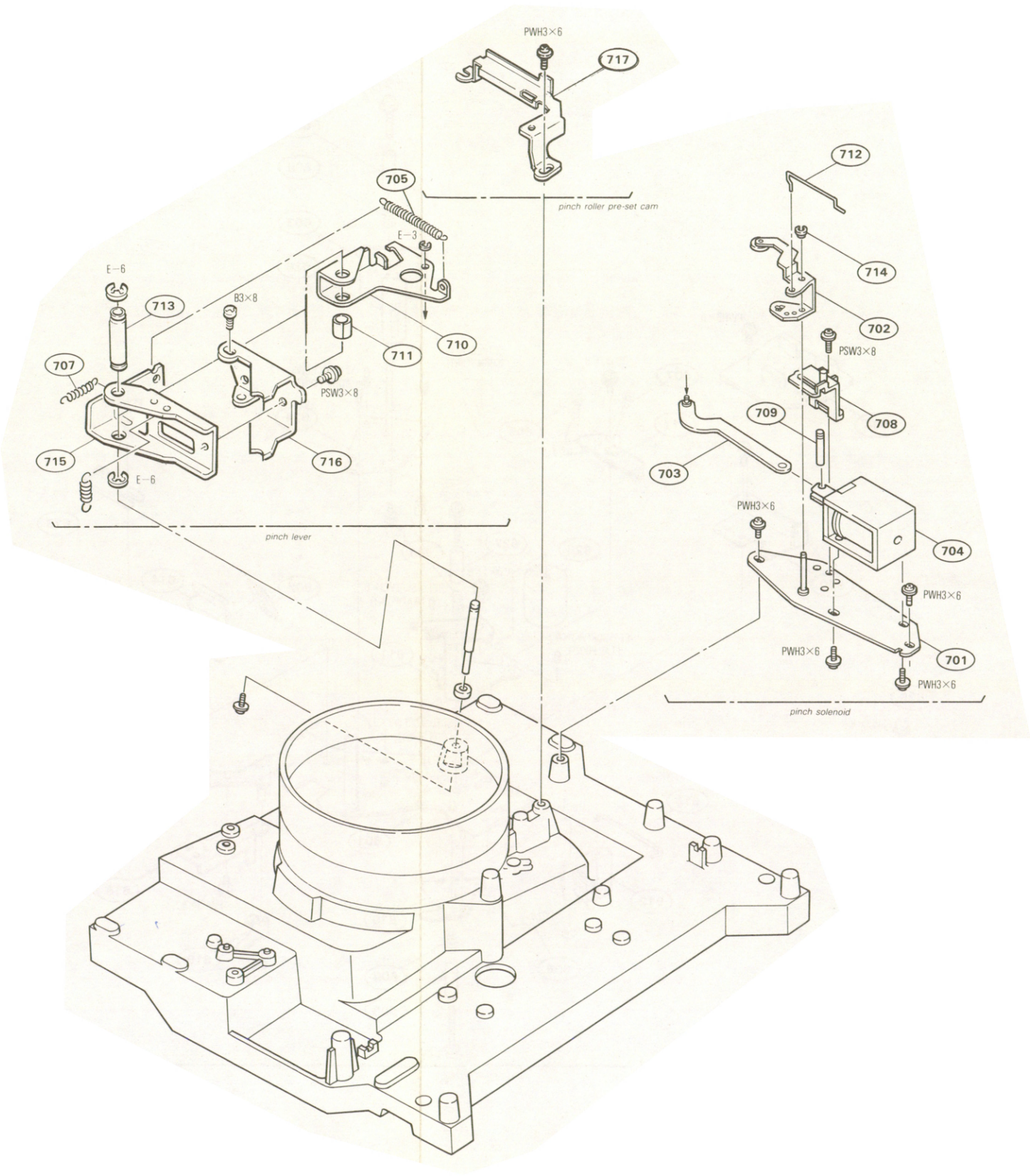
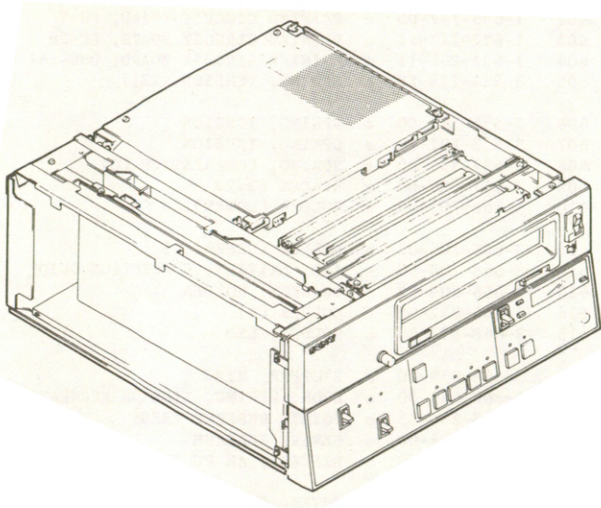
No.	Part No.	SP	Description
501	A-6709-561-A	s	UPPER DRUM ASS'Y, DUR-38-R
502	A-6709-604-A	s	HEAD DRUM ASS'Y, DUH-38B-R
503	1-586-633-00	s	DETECTOR, DEW
504	1-615-924-11	o	PRINTED CIRCUIT BOARD, DUS-92
505	3-534-329-11	s	WASHER, TAPE GUIDE
506	3-630-029-01	s	SPACER, FLANGE (0.01T)
507	3-630-029-11	s	SPACER, FLANGE (0.02T)
508	3-630-029-21	s	SPACER, FLANGE (0.05T)
509	3-630-029-31	s	SPACER, FLANGE (0.1T)
510	3-630-029-41	s	SPACER, FLANGE (0.03T)
511	3-641-612-00	s	GUIDE, TAPE
512	3-641-615-00	s	SPRING, COMPRESSION
513	3-641-616-00	s	NUT, TAPE GUIDE ADJUSTMENT
514	3-641-621-00	s	SCREW, HEAD ADJUSTMENT
515	3-641-622-00	s	SPRING, COMPRESSION
516	3-645-076-00	o	WASHER, M-REEL S
517	3-647-815-00	o	PLATE, ADJUSTMENT, CTL HEAD
518	3-647-816-00	o	POLE, SUPPORT, CTL BRACKET
519	3-655-631-00	o	TERMINAL, GRUND
520	3-655-675-02	o	CASE (F), AU
521	3-655-676-01	o	BRACKET (A), CTL HEAD
522	3-655-677-01	o	BRACKET (B), CTL HEAD
523	3-655-678-03	o	CASE (B), AU
524	3-672-729-01	s	TG-2
525	3-672-730-01	s	TG-3
526	3-672-731-01	s	TG-4
527	3-672-762-01	o	PIN, DRUM
528	3-672-763-01	o	CAM, P OFFSET PREVENTION
529	3-688-807-01	s	FRANGE, TAPE GUIDE
530	3-703-467-01	s	SCREW
531	3-710-826-01	o	SHIELD, CN
532	8-825-578-41	s	HEAD, AUDIO (PS264-5803)
533	8-835-258-02	s	MOTOR, DC (BHF-1915B)

ERASE HEAD BASE



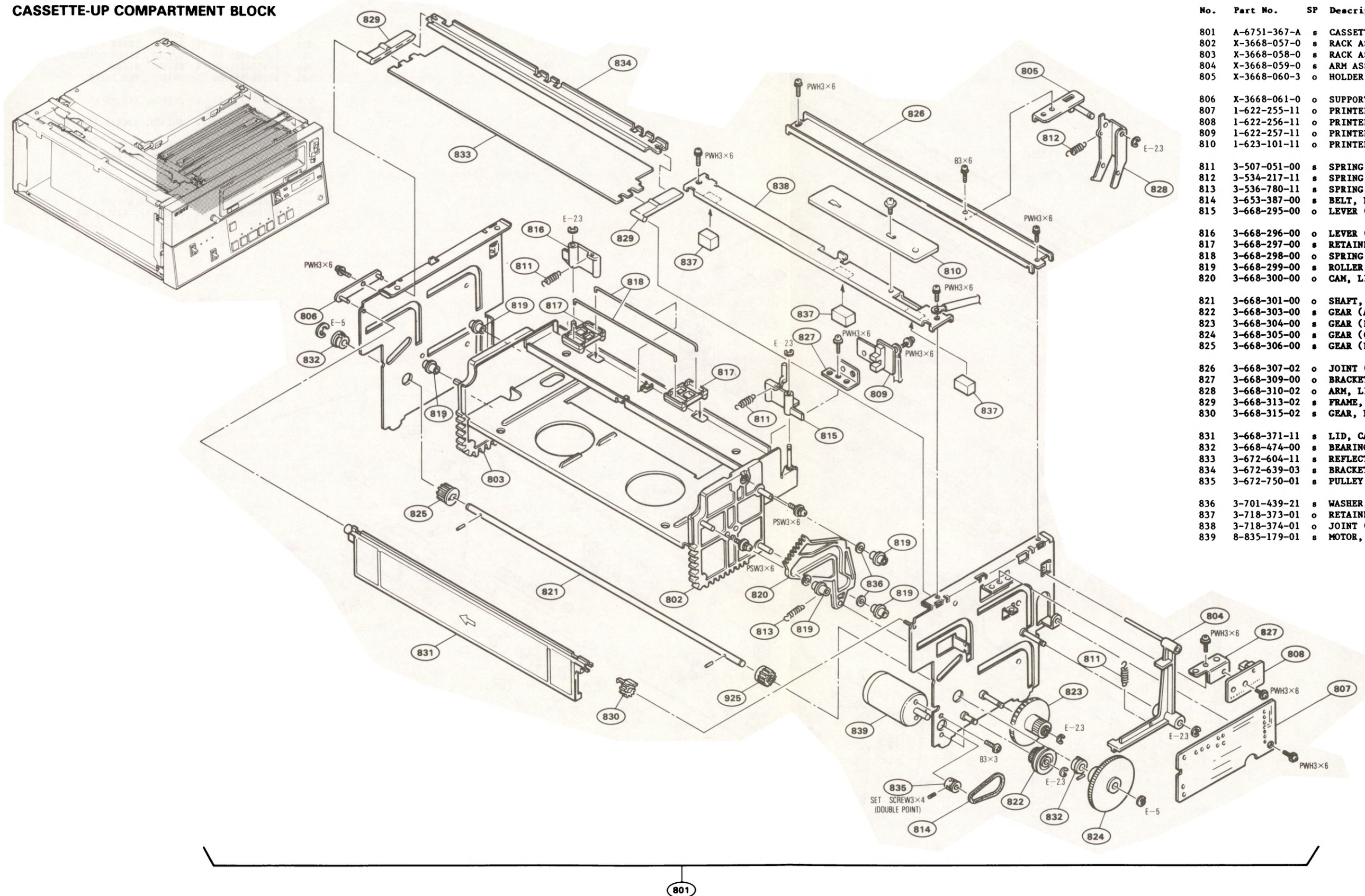
No.	Part No.	SP	Description
601	X-3668-728-0	o	DECK ASS'Y, E HEAD
602	1-603-737-00	o	PRINTED CIRCUIT BOARD, PH-5
603	1-622-223-11	o	PRINTED CIRCUIT BOARD, EC-28
604	1-622-261-11	o	PRINTED CIRCUIT BOARD, DUS-147
605	3-534-238-XX	s	SPRING, TENSION (23T)
606	3-535-531-00	s	SPRING, TENSION
607	3-538-102-00	s	SPRING, TENSION
608	3-637-335-00	s	SPRING, COMPRESSION (C)
609	3-657-086-00	o	SPACER (3x20)
610	3-668-705-00	s	HOLDER (LOWER), S
611	3-668-706-02	s	HOLDER (UPPER), S
612	3-668-708-00	s	ARM, DRIVING, CORRECTION GUIDE
613	3-668-809-02	o	BRACKET, HOLDER
614	3-668-832-02	o	HOLDER (S)
615	3-668-837-00	o	HOLDER, LED
616	3-668-859-00	o	STOPPER, RING
617	3-668-860-00	o	HOOK, SPRING, TENSION REGULATOR
618	3-668-884-03	o	JOINT, RESERVE PRESS
619	3-668-894-00	o	LEVER, RELEASE
620	3-668-962-00	o	BRACKET, AH PC BOARD
621	3-669-920-00	o	COVER, S PHOTO
622	3-669-963-00	o	SPRING, LEAF, GROUND
623	3-669-964-00	o	PLATE, GROUND
624	3-672-723-00	o	TABLE, HEAD, E
625	3-672-764-03	s	GUARD, S
626	3-718-417-01	o	BALANCER
627	4-855-006-11	s	SPACER (3x14)
628	8-825-514-20	s	HEAD, CTL (PP170-58)

PINCH LEVER AND PINCH SOLENOID BLOCKS

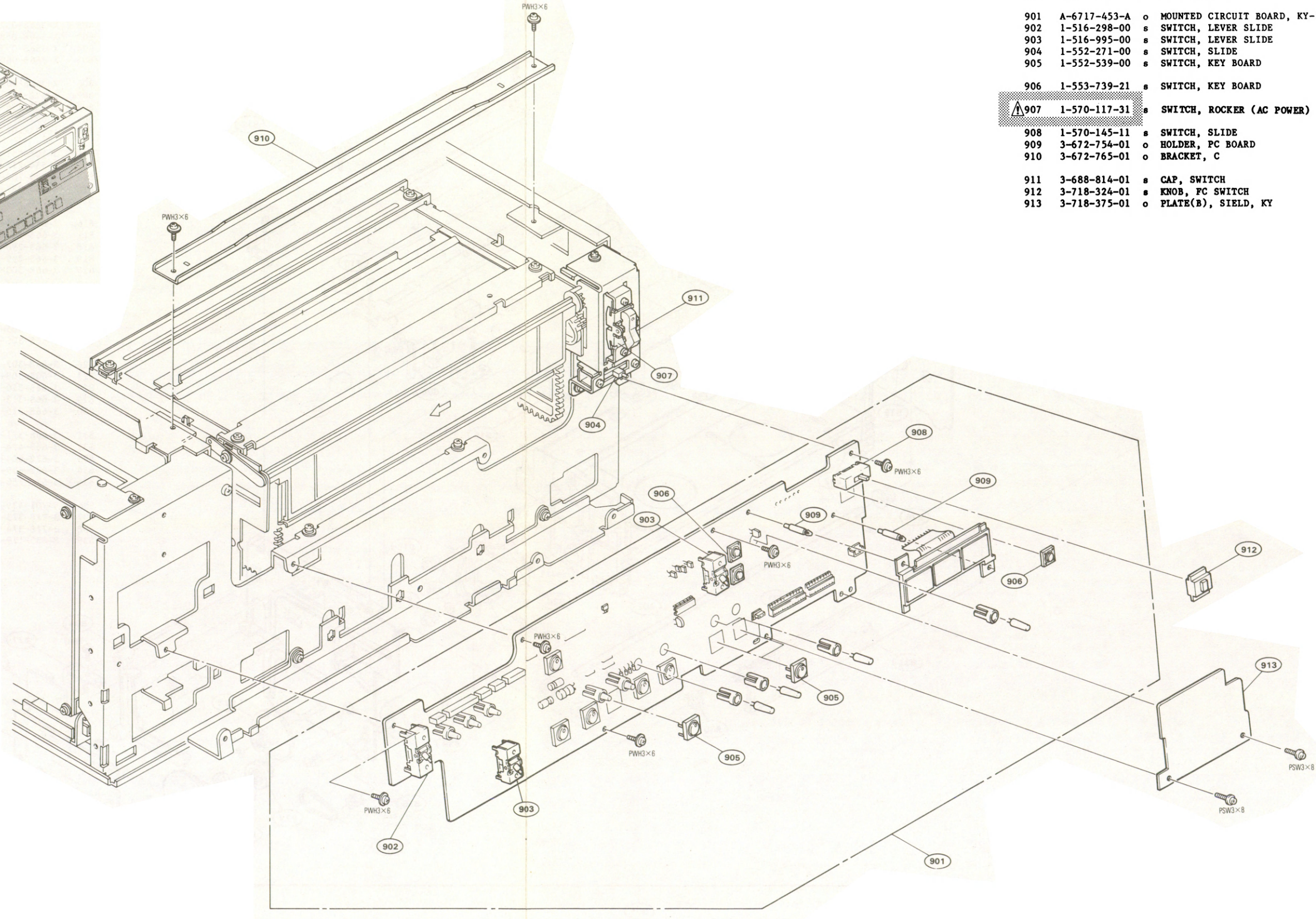
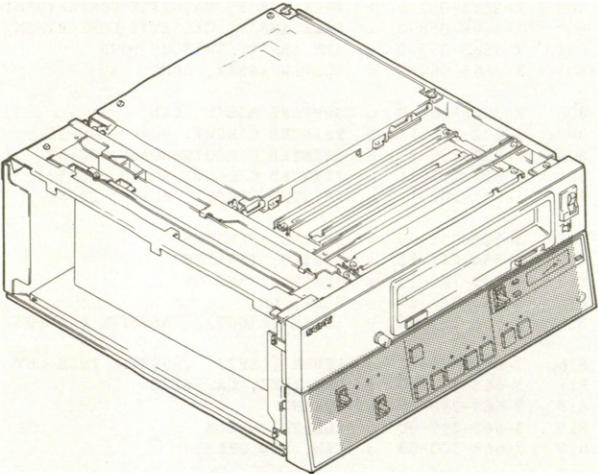


No.	Part No.	SP	Description
701	X-3668-734-0	o	BASE ASS'Y, PINCH PRESS
702	X-3668-735-3	s	LEVER ASS'Y, RESERVE PRESS
703	X-3668-736-0	o	JOINT ASS'Y
704	1-454-416-31	s	SOLENOID, PLUNGER
705	3-610-265-02	s	SPRING
706	3-642-477-00		SPRING, TENSION
707	3-645-392-00	s	SPRING, TENSION
708	3-668-863-00	s	GUIDE, ARBOR
709	3-668-864-00	s	PIN, SOLENOID
710	3-668-865-00	o	LEVER (B), PINCH PRESS
711	3-668-867-00	o	SPACER (8x9)
712	3-668-884-03	o	JOINT, RESERVE PRESS
713	3-668-896-00	o	SLEEVE, PRESS LEVER, PINCH
714	3-703-074-00	s	CAP 3, SHAFT
715	3-718-364-01	o	LEVER (A), PINCH PRESS
716	3-718-365-01	o	PLATE, PRESS, PINCH
717	3-718-727-01	o	DECK, RESERVE PRESS

CASSETTE-UP COMPARTMENT BLOCK



FUNCTION CONTROL

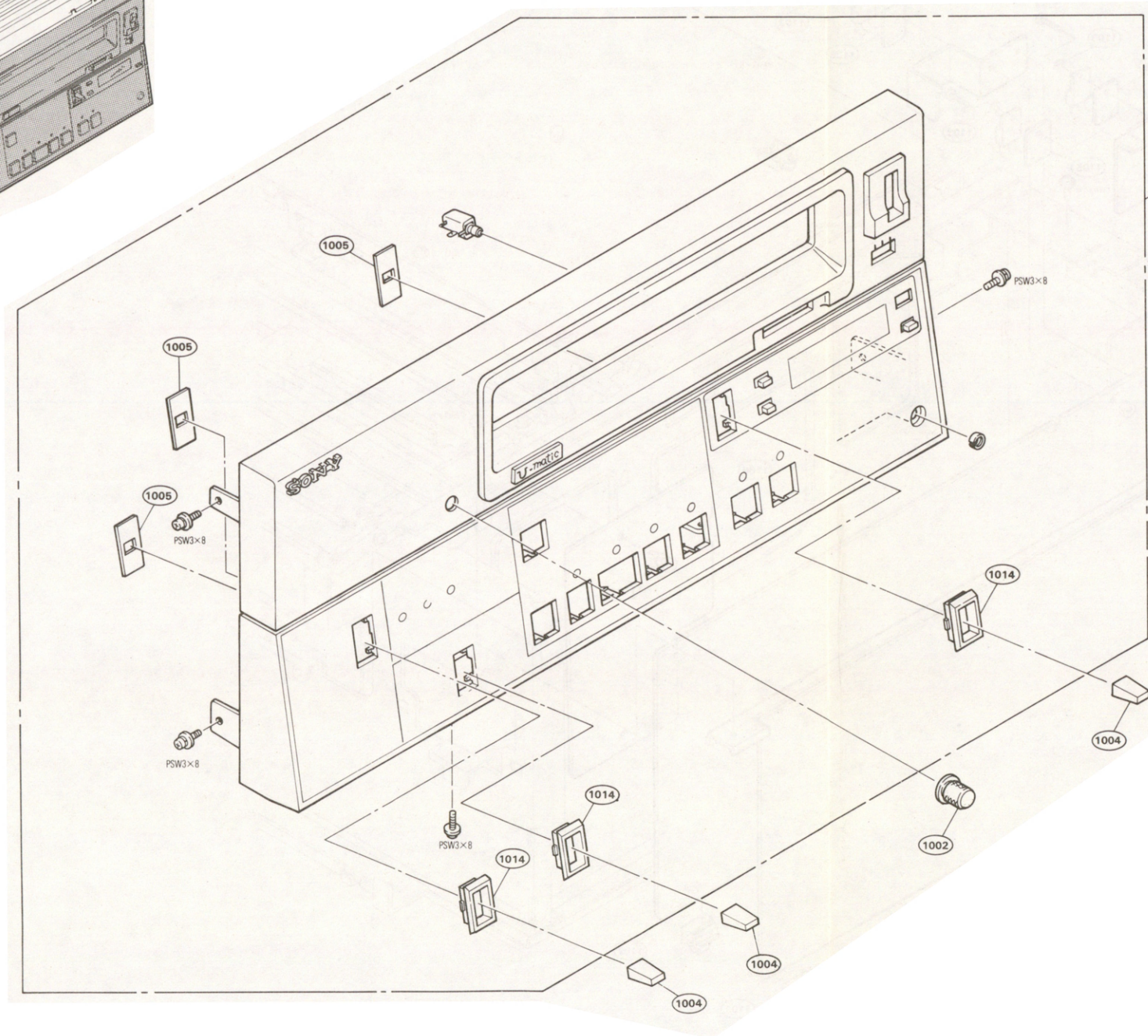
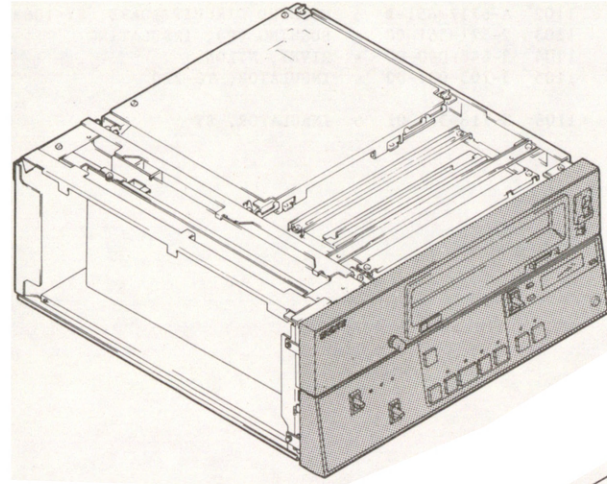


No.	Part No.	SP	Description
901	A-6717-453-A	o	MOUNTED CIRCUIT BOARD, KY-105D
902	1-516-298-00	s	SWITCH, LEVER SLIDE
903	1-516-995-00	s	SWITCH, LEVER SLIDE
904	1-552-271-00	s	SWITCH, SLIDE
905	1-552-539-00	s	SWITCH, KEY BOARD
906	1-553-739-21	s	SWITCH, KEY BOARD
907	1-570-117-31	s	SWITCH, ROCKER (AC POWER)
908	1-570-145-11	s	SWITCH, SLIDE
909	3-672-754-01	o	HOLDER, PC BOARD
910	3-672-765-01	o	BRACKET, C
911	3-688-814-01	s	CAP, SWITCH
912	3-718-324-01	s	KNOB, FC SWITCH
913	3-718-375-01	o	PLATE(B), SIELD, KY

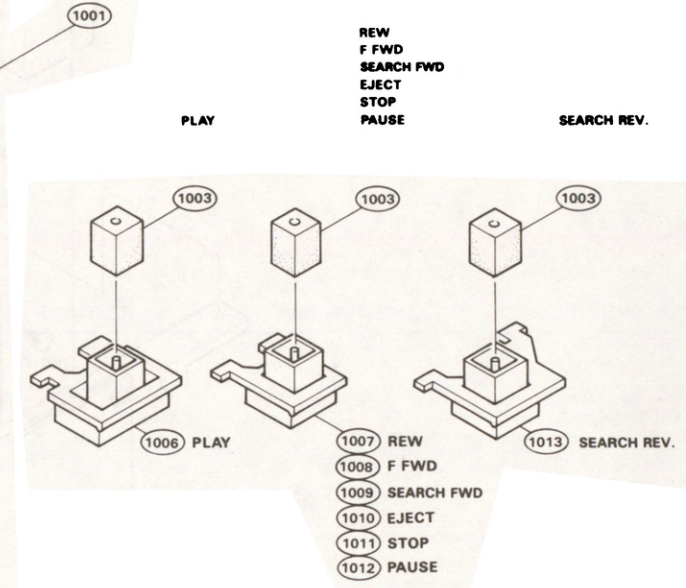
FRONT PANEL BLOCK

FRONT PANEL BLOCK

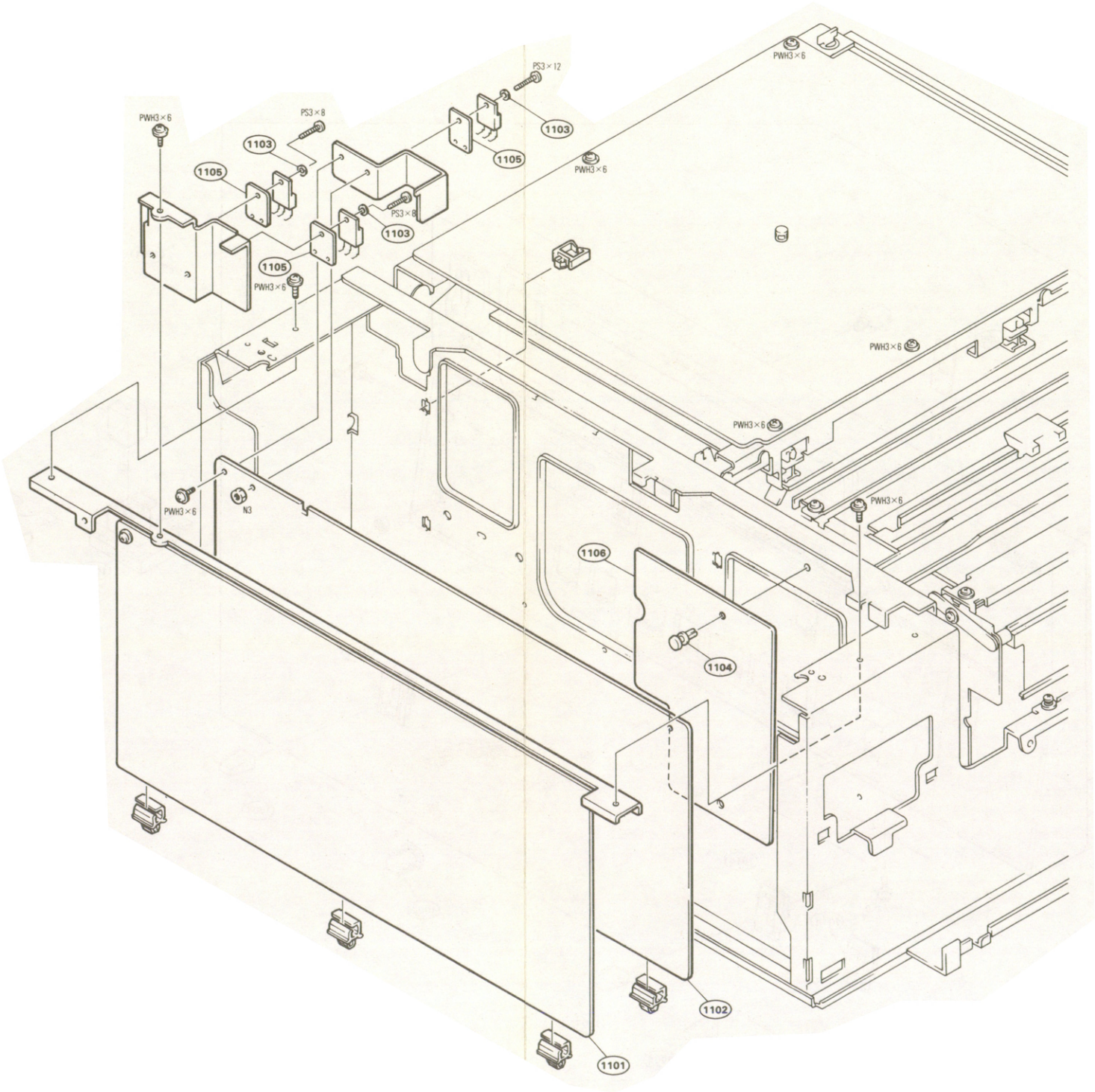
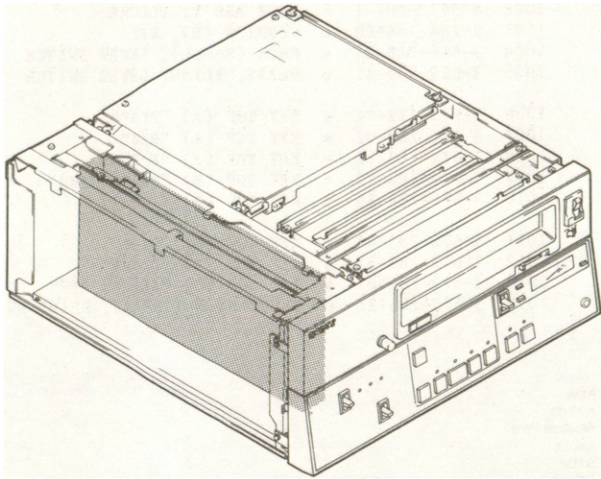
FRONT PANEL BLOCK



No.	Part No.	SP	Description
1001	A-6704-328-A	o	PANEL ASS'Y, FRONT
1002	X-3672-707-1	s	KNOB ASS'Y, VOLUME
1003	2-284-744-00	o	CUSHION (B), KEY
1004	3-668-028-21	s	KNOB (SMALL), LEVER SWITCH
1005	3-669-909-31	o	PLATE, BLIND, LEVER SWITCH
1006	3-672-782-02	s	KEY TOP (A) "PLAY"
1007	3-672-783-02	s	KEY TOP (B) "REW"
1008	3-672-783-12	s	KEY TOP (B) "F FWD"
1009	3-672-783-22	s	KEY TOP (B) "SEARCH FWD"
1010	3-672-783-32	s	KEY TOP (B) "EJECT"
1011	3-672-783-42	s	KEY TOP (B) "STOP"
1012	3-672-783-52	s	KEY TOP (B) "PAUSE"
1013	3-672-785-02	s	KEY TOP (D) "SEARCH REV"
1014	3-672-786-21	o	ESCUTCHEON (INNER), SLIDE SW

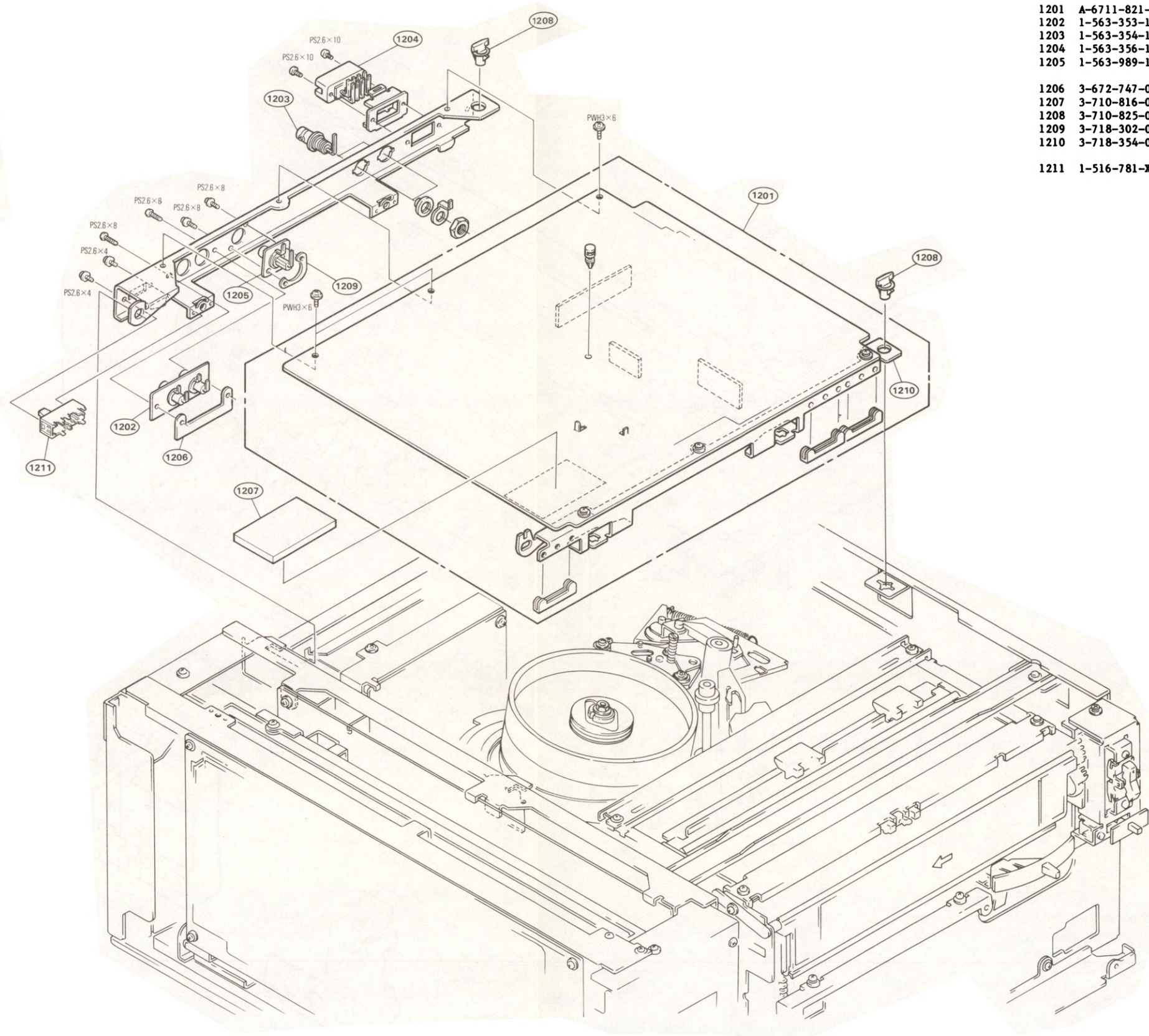
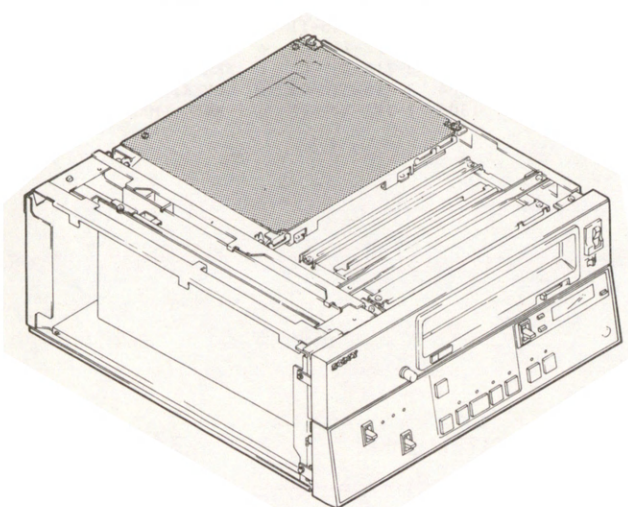


CHASSIS BLOCK (1), LEFT SIDE



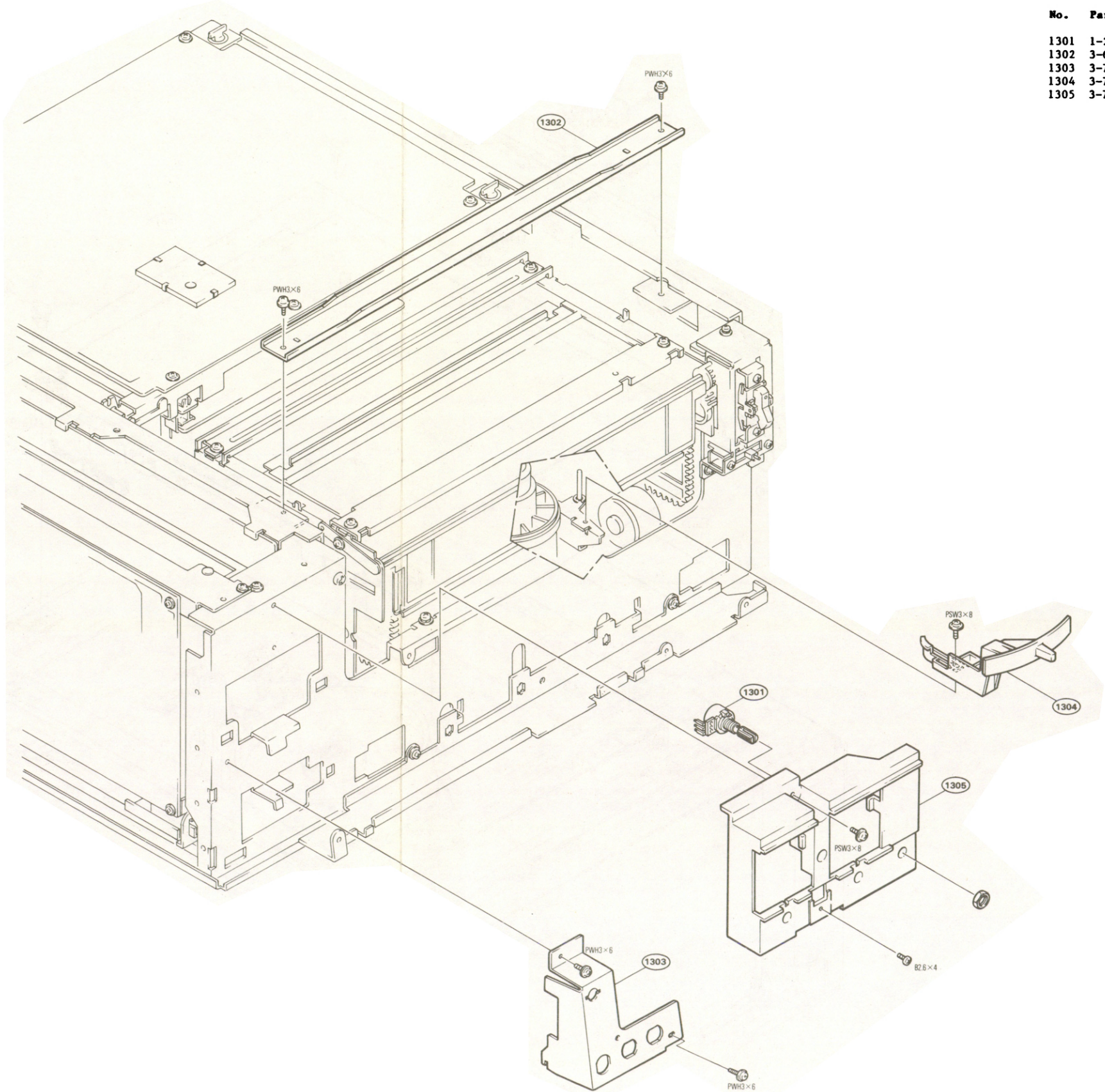
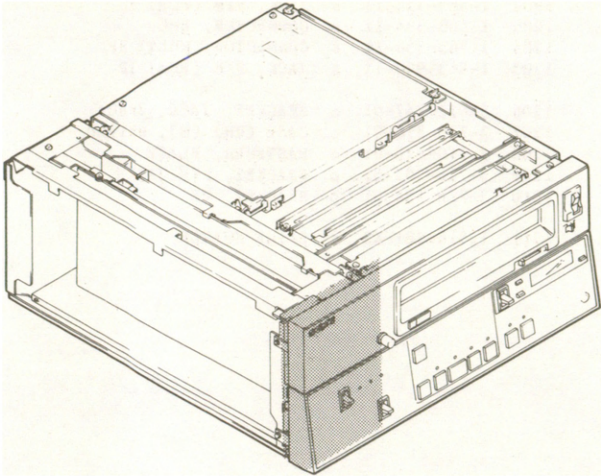
No.	Part No.	SP	Description
1101	A-6715-365-A	o	MOUNTED CIRCUIT BOARD, SV-93D
1102	A-6717-451-B	o	MOUNTED CIRCUIT BOARD, SY-106B
1103	2-371-561-00	s	BUSHING (P), INSULATING
1104	3-646-090-00	s	RIVET, NYLON
1105	3-703-037-00	s	INSULATOR, TO-220
1106	3-718-370-01	o	INSULATOR, SY

CHASSIS BLOCK (2), BACK SIDE



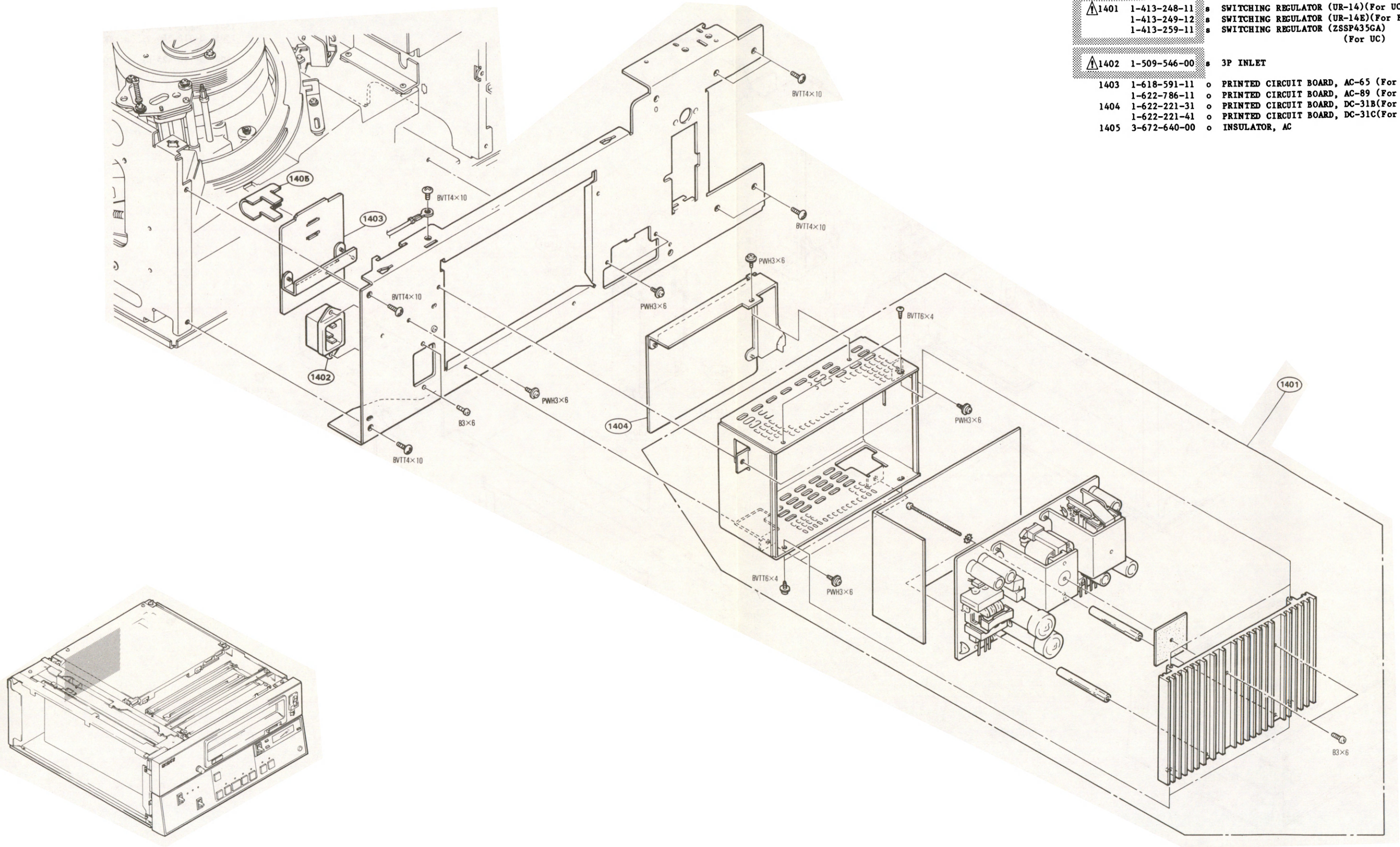
No.	Part No.	SP	Description
1201	A-6711-821-A	o	MOUNTED CIRCUIT BOARD, VA-57A
1202	1-563-353-11	s	JACK, PIN (RCA) 2P
1203	1-563-354-11	s	CONNECTOR, BNC
1204	1-563-356-11	s	CONNECTOR, MULTI 8P
1205	1-563-989-11	s	JACK, PIN (RCA) 1P
1206	3-672-747-01	o	BRACKET, JACK, 2PRCA
1207	3-710-816-01	o	CASE (VR) (M), SHIELD
1208	3-710-825-01	o	FASTENER, PLATE
1209	3-718-302-01	o	BRACKET, PIN JACK
1210	3-718-354-01	o	BRACKET, VR
1211	1-516-781-XX	s	SLIDE SWITCH

LEVEL CONTROL PANEL



No.	Part No.	SP	Description
1301	1-237-215-11	■	RES, VAR CARBON 100K
1302	3-672-765-01	○	BRACKET, C
1303	3-718-331-01	○	BRACKET, HEAD PHONE
1304	3-718-337-01	■	LEVER, SKEW
1305	3-718-341-01	○	PANEL, METER

SWITCHING REGULATOR

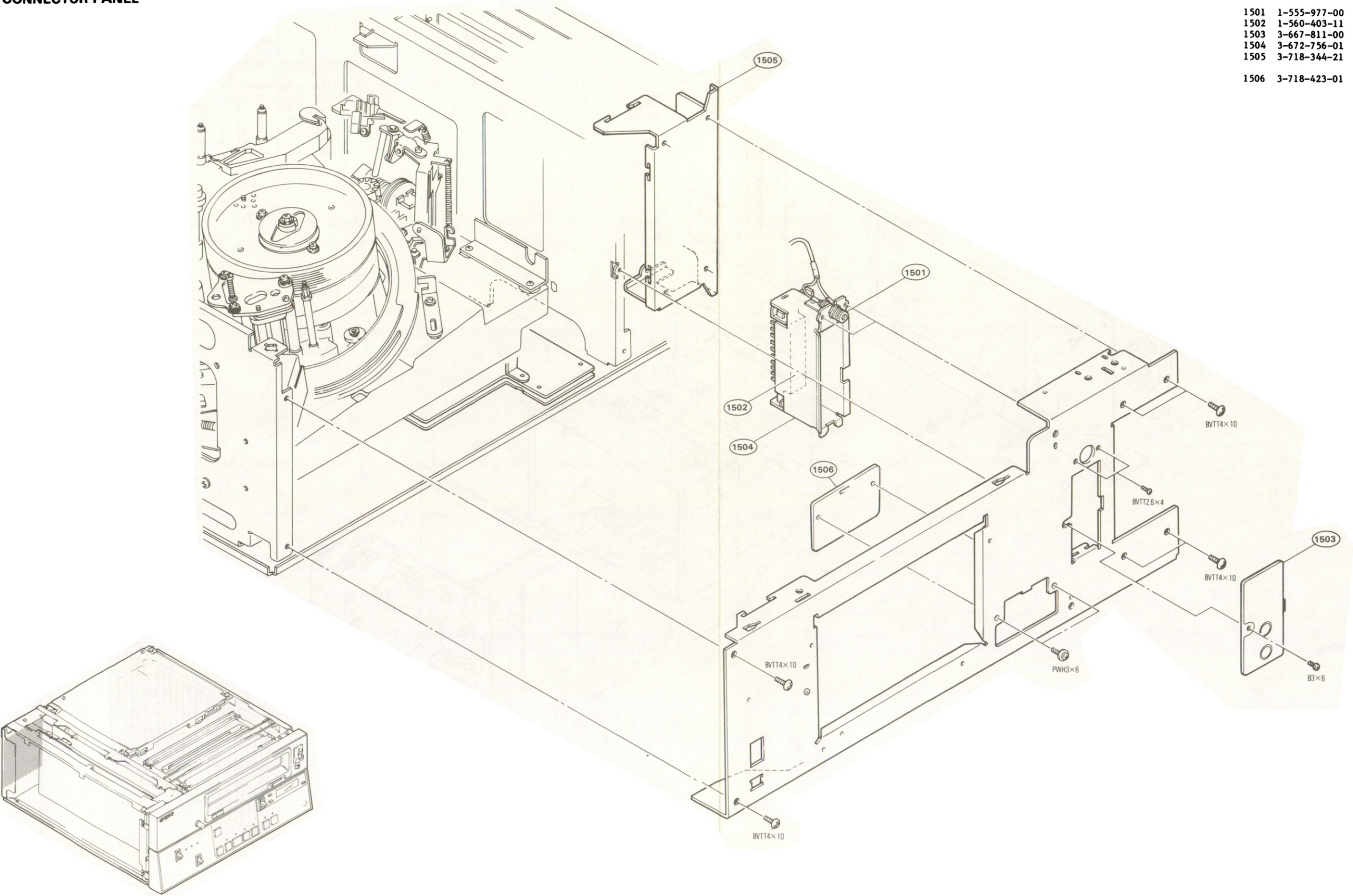


SWITCHING REGULATOR SWITCHING REGULATOR

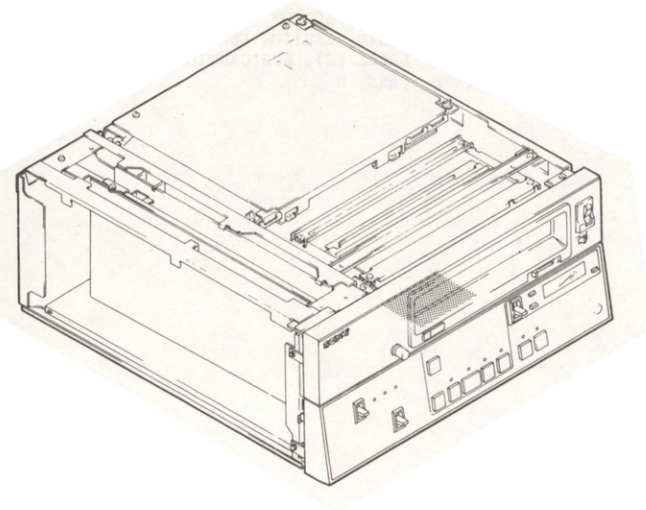
No.	Part No.	SP	Description
1401	1-413-248-11	s	SWITCHING REGULATOR (UR-14)(For UC)
	1-413-249-12	s	SWITCHING REGULATOR (UR-14E)(For EK)
	1-413-259-11	s	SWITCHING REGULATOR (ZSSP435GA) (For UC)
1402	1-509-546-00	s	3P INLET
1403	1-618-591-11	o	PRINTED CIRCUIT BOARD, AC-65 (For UC)
	1-622-786-11	o	PRINTED CIRCUIT BOARD, AC-89 (For EK)
1404	1-622-221-31	o	PRINTED CIRCUIT BOARD, DC-31B(For UC)
	1-622-221-41	o	PRINTED CIRCUIT BOARD, DC-31C(For EK)
1405	3-672-640-00	o	INSULATOR, AC

CONNECTOR PANEL

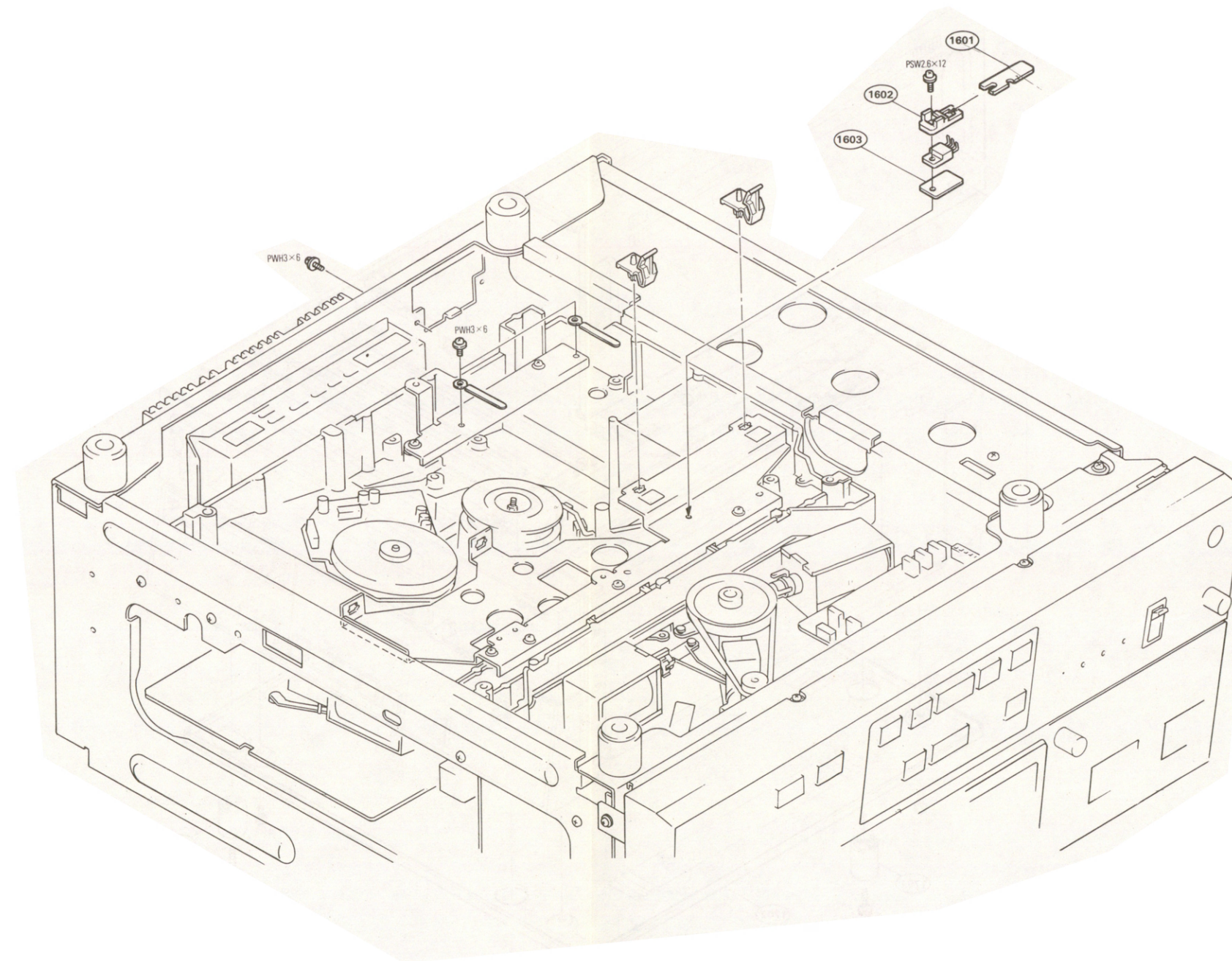
No.	Part No.	SP	Description
1501	1-555-977-00	s	CONNECTOR ASS'Y, DIN
1502	1-560-403-11	o	CONNECTOR, PC BOARD
1503	3-667-811-00	o	LID, MD
1504	3-672-756-01	o	CASE, RF
1505	3-718-344-21	o	BRACKET, XLR
1506	3-718-423-01	o	COVER, REM



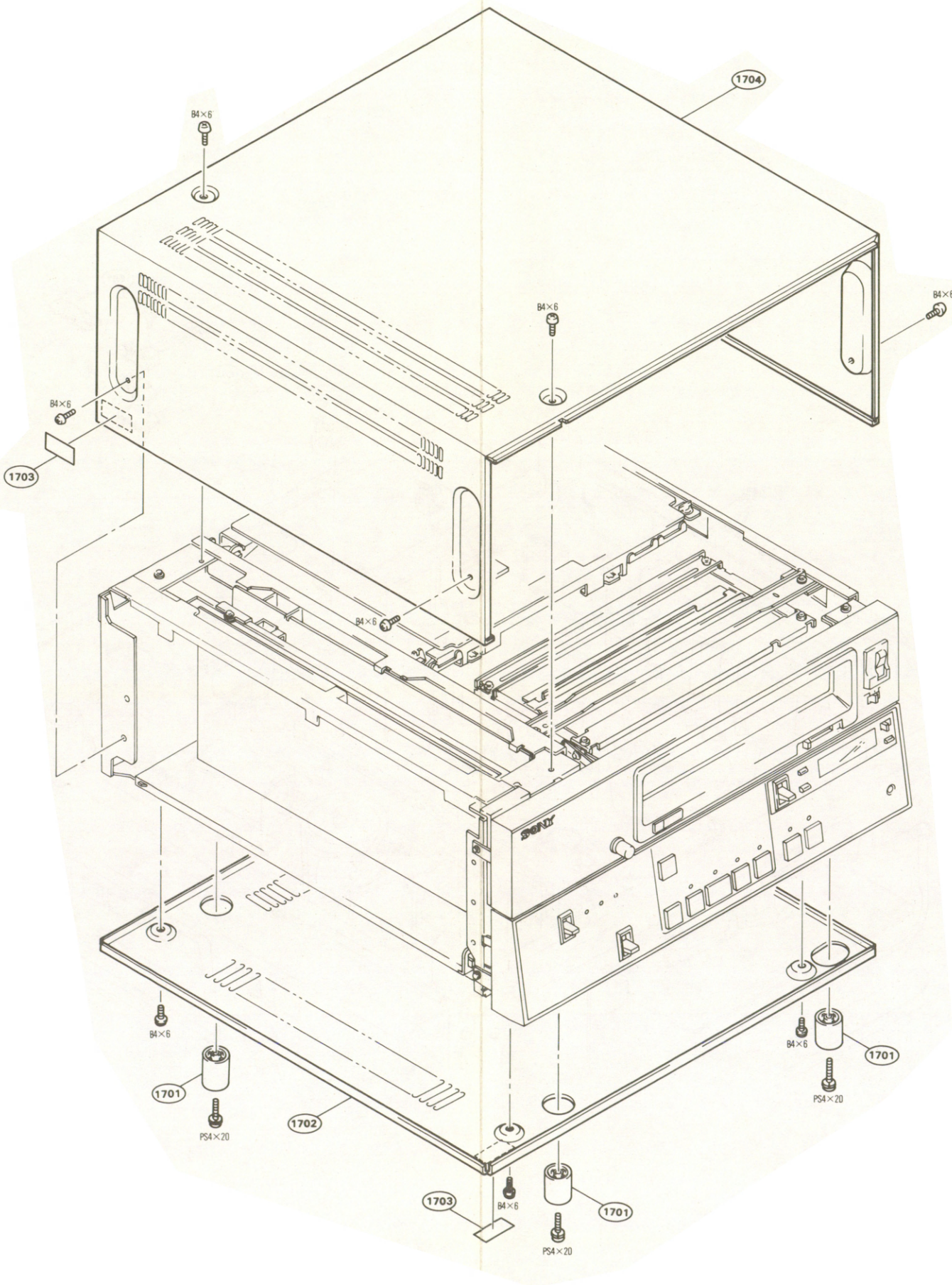
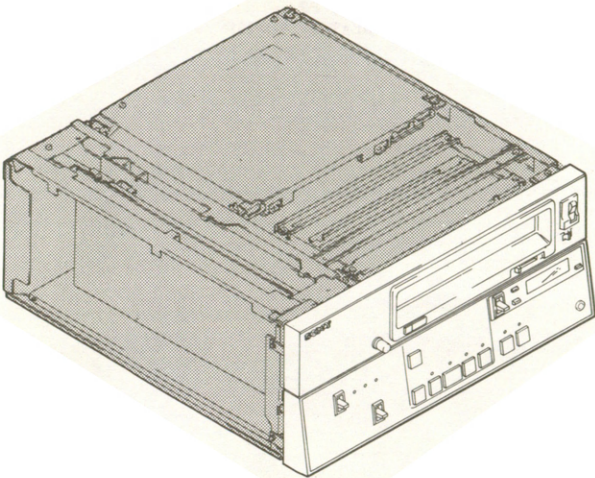
CHASSIS BLOCK (3), BOTTOM



No.	Part No.	SP	Description
1601	1-605-018-00	o	PRINTED CIRCUIT BOARD, PT-9
1602	3-669-904-00	o	HOLDER, PT
1603	3-703-207-11	s	INSULATOR, TO-220



ORNAMENTAL PANEL BLOCK



No.	Part No.	SP	Description
1701	3-642-656-01	s	LEG
1702	3-672-766-01	o	BOARD, BOTTOM
1703	3-703-079-31	o	LABEL, CAUTION (BACK)(For EK)
	3-703-848-01	o	LABEL (N), SUB CAUTION (For UC)
1704	3-718-347-01	o	CASE, U

15-3. ELECTRICAL PARTS LIST

ABBREVIATIONS

Ref. No.	Description	Ref. No.	Description	Ref. No.	Description
C□□, CT□□	CAPACITOR	IC□□	IC	Q□□	TRANSISTOR
CF□□	CERAMIC FILTER	J□□	JACK	R□□, RV□□	RESISTOR
CN□□	CONNECTOR	L□□	INDUCTOR	RY□□	RELAY
D□□	DIODE	M□□	MOTOR	S□□, SW□□	SWITCH
DL□□	DELAY LINE	ME□□	METER	SB□□	SOLAR BATTERY
F□□	FUSE	MIC□□	MICROPHONE	T□□	TRANSFORMER
FB□□	FERRITE BEAD	PG□□	PG COIL	TH□□	THERMISTOR
FL□□	FILTER	PL□□	LAMP	X□□	CRYSTAL
H□□	HEAD	PM□□	SOLENOIDE		

All capacitors are in micro farads unless otherwise specified.

All inductors are in micro henries unless otherwise specified.

All resistors are in ohms.

General Purpose Electrical Parts List

Parts that are not listed in the "reference numbers order list" are shown in following list.
Reference numbers are omitted.

Part No. SP Description

CAPACITOR

.MYLAR

1-130-467-00	•	CAP, MYLAR	470pF	5%	50V
1-130-468-00	•	CAP, MYLAR	560pF	5%	50V
1-130-469-00	•	CAP, MYLAR	680pF	5%	50V
1-130-470-00	•	CAP, MYLAR	820pF	5%	50V
1-130-471-00	•	CAP, MYLAR	1000pF	5%	50V
1-130-472-00	•	CAP, MYLAR	1200pF	5%	50V
1-130-473-00	•	CAP, MYLAR	1500pF	5%	50V
1-130-474-00	•	CAP, MYLAR	1800pF	5%	50V
1-130-475-00	•	CAP, MYLAR	2200pF	5%	50V
1-130-476-00	•	CAP, MYLAR	2700pF	5%	50V
1-130-477-00	•	CAP, MYLAR	3300pF	5%	50V
1-130-478-00	•	CAP, MYLAR	3900pF	5%	50V
1-130-479-00	•	CAP, MYLAR	4700pF	5%	50V
1-130-480-00	•	CAP, MYLAR	5600pF	5%	50V
1-130-481-00	•	CAP, MYLAR	6800pF	5%	50V
1-130-482-00	•	CAP, MYLAR	8200pF	5%	50V
1-130-483-00	•	CAP, MYLAR	0.01	5%	50V
1-130-484-00	•	CAP, MYLAR	0.012	5%	50V
1-130-485-00	•	CAP, MYLAR	0.015	5%	50V
1-130-486-00	•	CAP, MYLAR	0.018	5%	50V
1-130-487-00	•	CAP, MYLAR	0.022	5%	50V
1-130-488-00	•	CAP, MYLAR	0.027	5%	50V
1-130-489-00	•	CAP, MYLAR	0.033	5%	50V
1-130-490-11	•	CAP, MYLAR	0.039	5%	50V
1-130-491-00	•	CAP, MYLAR	0.047	5%	50V
1-130-492-11	•	CAP, MYLAR	0.056	5%	50V
1-130-493-00	•	CAP, MYLAR	0.068	5%	50V
1-130-494-11	•	CAP, MYLAR	0.082	5%	50V
1-130-495-00	•	CAP, MYLAR	0.1	5%	50V
1-130-496-00	•	CAP, MYLAR	0.12	5%	50V
1-130-497-00	•	CAP, MYLAR	0.15	5%	50V
1-130-498-00	•	CAP, MYLAR	0.18	5%	50V
1-130-499-00	•	CAP, MYLAR	0.22	5%	50V
1-136-502-11	•	CAP, MYLAR	0.33	5%	50V

Part No. SP Description

.MICA, SILVERED

1-107-019-00	•	CAP, MICA	1.0pF	±0.5pF	500V
1-107-039-00	•	CAP, MICA	1.2pF	±0.5pF	500V
1-107-040-00	•	CAP, MICA	1.5pF	±0.5pF	500V
1-107-041-00	•	CAP, MICA	1.8pF	±0.5pF	500V
1-107-042-00	•	CAP, MICA	2.2pF	±0.5pF	500V
1-107-043-00	•	CAP, MICA	2.7pF	±0.5pF	500V
1-107-044-00	•	CAP, MICA	3.3pF	±0.5pF	500V
1-107-045-00	•	CAP, MICA	3.9pF	±0.5pF	500V
1-107-046-00	•	CAP, MICA	4.7pF	±0.5pF	500V
1-107-026-00	•	CAP, MICA	5.1pF	±0.5pF	500V
1-107-047-00	•	CAP, MICA	5.6pF	±0.5pF	500V
1-107-048-00	•	CAP, MICA	6.8pF	±0.5pF	500V
1-107-049-00	•	CAP, MICA	8.2pF	±0.5pF	500V
1-107-202-00	•	CAP, MICA	10pF	5%	500V
1-107-203-00	•	CAP, MICA	11pF	5%	500V
1-107-204-00	•	CAP, MICA	12pF	5%	500V
1-107-205-00	•	CAP, MICA	13pF	5%	500V
1-107-206-00	•	CAP, MICA	15pF	5%	500V
1-107-207-00	•	CAP, MICA	16pF	5%	500V
1-107-208-00	•	CAP, MICA	18pF	5%	500V
1-107-209-00	•	CAP, MICA	20pF	5%	500V
1-107-210-00	•	CAP, MICA	22pF	5%	500V
1-107-211-00	•	CAP, MICA	24pF	5%	500V
1-107-157-00	•	CAP, MICA	27pF	5%	500V
1-107-158-00	•	CAP, MICA	30pF	5%	500V
1-107-159-00	•	CAP, MICA	33pF	5%	500V
1-107-074-00	•	CAP, MICA	36pF	5%	50V
1-107-075-00	•	CAP, MICA	39pF	5%	50V
1-107-076-00	•	CAP, MICA	43pF	5%	50V
1-107-077-00	•	CAP, MICA	47pF	5%	50V
1-107-164-00	•	CAP, MICA	51pF	5%	500V
1-107-165-00	•	CAP, MICA	56pF	5%	500V
1-107-166-00	•	CAP, MICA	62pF	5%	500V
1-107-036-00	•	CAP, MICA	68pF	5%	500V
1-107-167-00	•	CAP, MICA	75pF	5%	500V
1-107-083-00	•	CAP, MICA	82pF	5%	50V
1-107-084-00	•	CAP, MICA	91pF	5%	50V
1-107-085-00	•	CAP, MICA	100pF	5%	50V
1-107-086-00	•	CAP, MICA	110pF	5%	50V
1-107-087-00	•	CAP, MICA	120pF	5%	50V
1-109-538-00	•	CAP, MICA	130pF	5%	100V
1-109-539-00	•	CAP, MICA	150pF	5%	100V
1-107-090-00	•	CAP, MICA	160pF	5%	50V
1-109-540-00	•	CAP, MICA	180pF	5%	100V
1-109-541-00	•	CAP, MICA	200pF	5%	100V
1-109-542-00	•	CAP, MICA	220pF	5%	100V
1-109-545-00	•	CAP, MICA	270pF	5%	100V
1-109-547-00	•	CAP, MICA	330pF	5%	100V
1-109-549-00	•	CAP, MICA	390pF	5%	100V
1-109-633-00	•	CAP, MICA	470pF	2%	500V
1-109-555-00	•	CAP, MICA	560pF	5%	100V
1-109-635-00	•	CAP, MICA	470pF	2%	500V

Part No. SP Description

.ELECTROLYTIC

1-124-902-00	s	CAP, ELECT	0.47	20%	50V
1-124-791-11	s	CAP, ELECT	1.0	20%	100V
1-124-925-11	s	CAP, ELECT	2.2	20%	100V
1-123-382-00	s	CAP, ELECT	3.3	20%	100V
1-124-927-00	s	CAP, ELECT	4.7	20%	100V
1-123-875-91	s	CAP, ELECT	10	20%	50V
1-124-915-11	s	CAP, ELECT	10	20%	63V
1-124-667-11	s	CAP, ELECT	10	20%	100V
1-124-908-11	s	CAP, ELECT	22	20%	50V
1-124-916-11	s	CAP, ELECT	22	20%	63V
1-124-929-11	s	CAP, ELECT	22	20%	100V
1-124-963-11	s	CAP, ELECT	33	20%	16V
1-124-482-11	s	CAP, ELECT	33	20%	35V
1-124-917-11	s	CAP, ELECT	33	20%	63V
1-124-930-11	s	CAP, ELECT	33	20%	100V
1-124-446-11	s	CAP, ELECT	47	20%	10V
1-124-477-11	s	CAP, ELECT	47	20%	25V
1-124-910-11	s	CAP, ELECT	47	20%	50V
1-124-918-11	s	CAP, ELECT	47	20%	63V
1-124-931-11	s	CAP, ELECT	47	20%	100V
1-124-443-00	s	CAP, ELECT	100	20%	10V
1-126-101-11	s	CAP, ELECT	100	20%	16V
1-124-478-11	s	CAP, ELECT	100	20%	25V
1-124-122-11	s	CAP, ELECT	100	20%	50V
1-124-572-11	s	CAP, ELECT	100	20%	63V
1-123-605-00	s	CAP, ELECT	100	20%	100V
1-124-444-00	s	CAP, ELECT	220	20%	10V
1-124-120-11	s	CAP, ELECT	220	20%	25V
1-124-484-11	s	CAP, ELECT	220	20%	35V
1-124-911-11	s	CAP, ELECT	220	20%	50V
1-124-919-51	s	CAP, ELECT	220	20%	63V
1-124-628-11	s	CAP, ELECT	220	20%	100V
1-124-442-00	s	CAP, ELECT	330	20%	6.3V
1-124-604-00	s	CAP, ELECT	330	20%	10V
1-124-119-00	s	CAP, ELECT	330	20%	16V
1-124-479-11	s	CAP, ELECT	330	20%	25V
1-124-485-11	s	CAP, ELECT	330	20%	35V
1-124-912-11	s	CAP, ELECT	330	20%	50V
1-124-472-11	s	CAP, ELECT	470	20%	10V
1-124-475-11	s	CAP, ELECT	470	20%	16V
1-124-480-11	s	CAP, ELECT	470	20%	25V
1-126-104-11	s	CAP, ELECT	470	20%	35V
1-124-913-11	s	CAP, ELECT	470	20%	50V
1-124-921-11	s	CAP, ELECT	470	20%	63V
1-124-471-00	s	CAP, ELECT	1000	20%	6.3V
1-124-473-11	s	CAP, ELECT	1000	20%	10V
1-124-555-00	s	CAP, ELECT	1000	20%	16V
1-124-557-11	s	CAP, ELECT	1000	20%	25V
1-126-105-11	s	CAP, ELECT	1000	20%	35V
1-124-637-11	s	CAP, ELECT	1000	20%	50V
1-124-922-11	s	CAP, ELECT	1000	20%	63V
1-124-893-11	s	CAP, ELECT	2200	20%	10V
1-124-556-11	s	CAP, ELECT	2200	20%	16V
1-124-563-11	s	CAP, ELECT	2200	20%	25V
1-124-618-11	s	CAP, ELECT	2200	20%	35V

Part No. SP Description

1-124-607-11	s	CAP, ELECT	2200	20%	50V
1-124-621-11	s	CAP, ELECT	3300	20%	6.3V
1-124-887-00	s	CAP, ELECT	3300	20%	16V
1-124-636-00	s	CAP, ELECT	3300	20%	25V
1-124-762-00	s	CAP, ELECT	4700	20%	10V
1-124-898-11	s	CAP, ELECT	4700	20%	16V
1-124-564-11	s	CAP, ELECT	4700	20%	25V
1-124-891-11	s	CAP, ELECT	10000	20%	6.3V
1-124-763-00	s	CAP, ELECT	10000	20%	10V

Part No. SP Description

.CHIP, CERAMIC

1-163-083-00	•	CAP, CHIP CERAMIC	1pF	±0.25pF	50V
1-163-085-00	•	CAP, CHIP CERAMIC	2pF	±0.25pF	50V
1-163-087-00	•	CAP, CHIP CERAMIC	4pF	±0.25pF	50V
1-163-089-00	•	CAP, CHIP CERAMIC	6pF	±0.5pF	50V
1-163-091-00	•	CAP, CHIP CERAMIC	8pF	±0.5pF	50V
1-163-093-00	•	CAP, CHIP CERAMIC	10pF	5%	50V
1-163-097-00	•	CAP, CHIP CERAMIC	15pF	5%	50V
1-163-101-00	•	CAP, CHIP CERAMIC	22pF	5%	50V
1-163-105-00	•	CAP, CHIP CERAMIC	33pF	5%	50V
1-163-109-00	•	CAP, CHIP CERAMIC	47pF	5%	50V
1-163-113-00	•	CAP, CHIP CERAMIC	68pF	5%	50V
1-163-117-00	•	CAP, CHIP CERAMIC	100pF	5%	50V
1-163-121-00	•	CAP, CHIP CERAMIC	150pF	5%	50V
1-163-125-00	•	CAP, CHIP CERAMIC	220pF	5%	50V
1-163-129-00	•	CAP, CHIP CERAMIC	330pF	5%	50V
1-163-133-00	•	CAP, CHIP CERAMIC	470pF	5%	50V
1-163-137-00	•	CAP, CHIP CERAMIC	680pF	5%	50V
1-163-141-00	•	CAP, CHIP CERAMIC	1000pF	5%	50V
1-163-145-00	•	CAP, CHIP CERAMIC	1500pF	10%	50V
1-163-013-00	•	CAP, CHIP CERAMIC	2200pF	10%	50V
1-163-015-00	•	CAP, CHIP CERAMIC	3300pF	10%	50V
1-163-017-00	•	CAP, CHIP CERAMIC	4700pF	10%	50V
1-163-019-00	•	CAP, CHIP CERAMIC	6800pF	10%	50V
1-163-021-00	•	CAP, CHIP CERAMIC	0.01	10%	50V
1-163-023-00	•	CAP, CHIP CERAMIC	0.015	10%	50V
1-163-034-00	•	CAP, CHIP CERAMIC	0.033		50V
1-163-035-00	•	CAP, CHIP CERAMIC	0.047		50V
1-163-036-00	•	CAP, CHIP CERAMIC	0.068		50V
1-163-038-00	•	CAP, CHIP CERAMIC	0.1		50V

Part No. SP Description

INDUCTOR

.MICRO

1-408-397-00	•	INDUCTOR, MICRO	1.0	5%
1-408-399-00	•	INDUCTOR, MICRO	1.5	5%
1-408-400-00	•	INDUCTOR, MICRO	1.8	5%
1-408-401-00	•	INDUCTOR, MICRO	2.2	5%
1-408-403-00	•	INDUCTOR, MICRO	3.3	5%
1-408-404-00	•	INDUCTOR, MICRO	3.9	5%
1-408-405-00	•	INDUCTOR, MICRO	4.7	5%
1-408-406-00	•	INDUCTOR, MICRO	5.6	5%
1-408-407-00	•	INDUCTOR, MICRO	6.8	5%
1-408-408-00	•	INDUCTOR, MICRO	8.2	5%
1-408-409-00	•	INDUCTOR, MICRO	10	5%
1-408-410-00	•	INDUCTOR, MICRO	12	5%
1-408-411-00	•	INDUCTOR, MICRO	15	5%
1-408-412-00	•	INDUCTOR, MICRO	18	5%
1-408-413-00	•	INDUCTOR, MICRO	22	5%
1-408-414-00	•	INDUCTOR, MICRO	27	5%
1-408-415-00	•	INDUCTOR, MICRO	33	5%
1-408-416-00	•	INDUCTOR, MICRO	39	5%
1-408-417-00	•	INDUCTOR, MICRO	47	5%
1-408-418-00	•	INDUCTOR, MICRO	56	5%
1-408-419-00	•	INDUCTOR, MICRO	68	5%
1-408-420-00	•	INDUCTOR, MICRO	82	5%
1-408-421-00	•	INDUCTOR, MICRO	100	5%
1-408-422-00	•	INDUCTOR, MICRO	120	5%
1-408-423-00	•	INDUCTOR, MICRO	150	5%
1-408-424-00	•	INDUCTOR, MICRO	180	5%
1-408-425-00	•	INDUCTOR, MICRO	220	5%
1-408-426-00	•	INDUCTOR, MICRO	270	5%
1-408-427-00	•	INDUCTOR, MICRO	330	5%
1-408-428-00	•	INDUCTOR, MICRO	390	5%
1-408-429-00	•	INDUCTOR, MICRO	470	5%
1-410-116-11	•	INDUCTOR, MICRO	560	5%
1-410-492-11	•	INDUCTOR, MICRO	680	5%
1-410-493-11	•	INDUCTOR, MICRO	820	5%
1-410-494-11	•	INDUCTOR, MICRO	1000	5%

Part No. SP Description

RESISTOR

.CARBON

1-249-381-11	s	RES, CARBON	1.0	5%	1/6W
1-249-382-11	s	RES, CARBON	1.2	5%	1/6W
1-249-383-11	s	RES, CARBON	1.5	5%	1/6W
1-249-384-11	s	RES, CARBON	1.8	5%	1/6W
1-249-385-11	s	RES, CARBON	2.2	5%	1/6W
1-249-386-11	s	RES, CARBON	2.7	5%	1/6W
1-249-387-11	s	RES, CARBON	3.3	5%	1/6W
1-249-388-11	s	RES, CARBON	3.9	5%	1/6W
1-249-389-11	s	RES, CARBON	4.7	5%	1/6W
1-249-390-11	s	RES, CARBON	5.6	5%	1/6W
1-249-391-11	s	RES, CARBON	6.8	5%	1/6W
1-249-392-11	s	RES, CARBON	8.2	5%	1/6W
1-249-393-11	s	RES, CARBON	10	5%	1/6W
1-249-394-11	s	RES, CARBON	12	5%	1/6W
1-249-395-11	s	RES, CARBON	15	5%	1/6W
1-249-396-11	s	RES, CARBON	18	5%	1/6W
1-249-397-11	s	RES, CARBON	22	5%	1/6W
1-249-398-11	s	RES, CARBON	27	5%	1/6W
1-249-399-11	s	RES, CARBON	33	5%	1/6W
1-249-400-11	s	RES, CARBON	39	5%	1/6W
1-249-401-11	s	RES, CARBON	47	5%	1/6W
1-249-402-11	s	RES, CARBON	56	5%	1/6W
1-249-403-11	s	RES, CARBON	68	5%	1/6W
1-215-394-00	s	RES, METAL	75	1%	1/6W
1-249-404-11	s	RES, CARBON	82	5%	1/6W
1-249-405-11	s	RES, CARBON	100	5%	1/6W
1-249-406-11	s	RES, CARBON	120	5%	1/6W
1-249-407-11	s	RES, CARBON	150	5%	1/6W
1-249-408-11	s	RES, CARBON	180	5%	1/6W
1-249-409-11	s	RES, CARBON	220	5%	1/6W
1-249-410-11	s	RES, CARBON	270	5%	1/6W
1-249-411-11	s	RES, CARBON	330	5%	1/6W
1-249-412-11	s	RES, CARBON	390	5%	1/6W
1-249-413-11	s	RES, CARBON	470	5%	1/6W
1-249-414-11	s	RES, CARBON	560	5%	1/6W
1-249-415-11	s	RES, CARBON	680	5%	1/6W
1-249-416-11	s	RES, CARBON	820	5%	1/6W
1-249-417-11	s	RES, CARBON	1.0k	5%	1/6W
1-249-418-11	s	RES, CARBON	1.2k	5%	1/6W
1-249-419-11	s	RES, CARBON	1.5k	5%	1/6W
1-249-420-11	s	RES, CARBON	1.8k	5%	1/6W
1-249-421-11	s	RES, CARBON	2.2k	5%	1/6W
1-249-422-11	s	RES, CARBON	2.7k	5%	1/6W
1-249-423-11	s	RES, CARBON	3.3k	5%	1/6W
1-249-424-11	s	RES, CARBON	3.9k	5%	1/6W
1-249-425-11	s	RES, CARBON	4.7k	5%	1/6W
1-249-426-11	s	RES, CARBON	5.6k	5%	1/6W
1-249-427-11	s	RES, CARBON	6.8k	5%	1/6W
1-249-428-11	s	RES, CARBON	8.2k	5%	1/6W
1-249-429-11	s	RES, CARBON	10k	5%	1/6W
1-249-430-11	s	RES, CARBON	12k	5%	1/6W
1-249-431-11	s	RES, CARBON	15k	5%	1/6W
1-249-432-11	s	RES, CARBON	18k	5%	1/6W
1-249-433-11	s	RES, CARBON	22k	5%	1/6W
1-249-434-11	s	RES, CARBON	27k	5%	1/6W

Part No. SP Description

1-249-435-11	s	RES, CARBON	33k	5%	1/6W
1-249-436-11	s	RES, CARBON	39k	5%	1/6W
1-249-437-11	s	RES, CARBON	47k	5%	1/6W
1-249-438-11	s	RES, CARBON	56k	5%	1/6W
1-249-439-11	s	RES, CARBON	68k	5%	1/6W
1-249-440-11	s	RES, CARBON	82k	5%	1/6W
1-249-441-11	s	RES, CARBON	100k	5%	1/6W
1-215-471-00	s	RES, METAL	120k	1%	1/6W
1-215-473-00	s	RES, METAL	150k	1%	1/6W
1-215-475-00	s	RES, METAL	180k	1%	1/6W
1-215-477-00	s	RES, METAL	220k	1%	1/6W
1-215-479-00	s	RES, METAL	270k	1%	1/6W
1-215-481-00	s	RES, METAL	330k	1%	1/6W
1-215-483-00	s	RES, METAL	390k	1%	1/6W
1-215-485-00	s	RES, METAL	470k	1%	1/6W
1-215-487-00	s	RES, METAL	560k	1%	1/6W
1-215-489-00	s	RES, METAL	680k	1%	1/6W
1-215-491-00	s	RES, METAL	820k	1%	1/6W
1-215-493-00	s	RES, METAL	1.0M	1%	1/6W

Part No. SP Description

.METAL

1-215-373-31	s	RES, METAL	10	1X	1/6W
1-215-374-00	s	RES, METAL	11	1X	1/6W
1-215-375-00	s	RES, METAL	12	1X	1/6W
1-215-376-00	s	RES, METAL	13	1X	1/6W
1-215-377-00	s	RES, METAL	15	1X	1/6W
1-215-378-00	s	RES, METAL	16	1X	1/6W
1-215-379-00	s	RES, METAL	18	1X	1/6W
1-215-380-00	s	RES, METAL	20	1X	1/6W
1-215-381-00	s	RES, METAL	22	1X	1/6W
1-215-382-00	s	RES, METAL	24	1X	1/6W
1-215-383-00	s	RES, METAL	27	1X	1/6W
1-215-384-00	s	RES, METAL	30	1X	1/6W
1-215-385-00	s	RES, METAL	33	1X	1/6W
1-215-386-00	s	RES, METAL	36	1X	1/6W
1-215-387-00	s	RES, METAL	39	1X	1/6W
1-215-388-00	s	RES, METAL	43	1X	1/6W
1-215-389-00	s	RES, METAL	47	1X	1/6W
1-215-390-00	s	RES, METAL	51	1X	1/6W
1-215-391-00	s	RES, METAL	56	1X	1/6W
1-215-392-00	s	RES, METAL	62	1X	1/6W
1-215-393-00	s	RES, METAL	68	1X	1/6W
1-215-394-00	s	RES, METAL	75	1X	1/6W
1-215-395-00	s	RES, METAL	82	1X	1/6W
1-215-396-00	s	RES, METAL	91	1X	1/6W
1-215-397-00	s	RES, METAL	100	1X	1/6W
1-215-398-00	s	RES, METAL	110	1X	1/6W
1-215-399-00	s	RES, METAL	120	1X	1/6W
1-215-400-00	s	RES, METAL	130	1X	1/6W
1-215-401-00	s	RES, METAL	150	1X	1/6W
1-215-402-00	s	RES, METAL	160	1X	1/6W
1-215-403-00	s	RES, METAL	180	1X	1/6W
1-215-404-00	s	RES, METAL	200	1X	1/6W
1-215-405-00	s	RES, METAL	220	1X	1/6W
1-215-406-00	s	RES, METAL	240	1X	1/6W
1-215-407-00	s	RES, METAL	270	1X	1/6W
1-215-408-00	s	RES, METAL	300	1X	1/6W
1-215-409-00	s	RES, METAL	330	1X	1/6W
1-215-410-00	s	RES, METAL	360	1X	1/6W
1-215-411-00	s	RES, METAL	390	1X	1/6W
1-215-412-00	s	RES, METAL	430	1X	1/6W
1-215-413-00	s	RES, METAL	470	1X	1/6W
1-215-414-00	s	RES, METAL	510	1X	1/6W
1-215-415-00	s	RES, METAL	560	1X	1/6W
1-215-416-00	s	RES, METAL	620	1X	1/6W
1-215-417-00	s	RES, METAL	680	1X	1/6W
1-215-418-00	s	RES, METAL	750	1X	1/6W
1-215-419-00	s	RES, METAL	820	1X	1/6W
1-215-420-00	s	RES, METAL	910	1X	1/6W
1-215-421-00	s	RES, METAL	1.0k	1X	1/6W
1-215-422-00	s	RES, METAL	1.1k	1X	1/6W
1-215-423-00	s	RES, METAL	1.2k	1X	1/6W
1-215-424-00	s	RES, METAL	1.3k	1X	1/6W
1-215-425-00	s	RES, METAL	1.5k	1X	1/6W
1-215-426-00	s	RES, METAL	1.6k	1X	1/6W
1-215-427-00	s	RES, METAL	1.8k	1X	1/6W
1-215-428-00	s	RES, METAL	2.0k	1X	1/6W
1-215-429-00	s	RES, METAL	2.2k	1X	1/6W
1-215-430-00	s	RES, METAL	2.4k	1X	1/6W
1-215-431-00	s	RES, METAL	2.7k	1X	1/6W
1-215-432-00	s	RES, METAL	3.0k	1X	1/6W

Part No. SP Description

1-215-433-00	s	RES, METAL	3.3k	1X	1/6W
1-215-434-00	s	RES, METAL	3.6k	1X	1/6W
1-215-435-00	s	RES, METAL	3.9k	1X	1/6W
1-215-436-00	s	RES, METAL	4.3k	1X	1/6W
1-215-437-00	s	RES, METAL	4.7k	1X	1/6W
1-215-438-00	s	RES, METAL	5.1k	1X	1/6W
1-215-439-00	s	RES, METAL	5.6k	1X	1/6W
1-215-440-00	s	RES, METAL	6.2k	1X	1/6W
1-215-441-00	s	RES, METAL	6.8k	1X	1/6W
1-215-442-00	s	RES, METAL	7.5k	1X	1/6W
1-215-443-00	s	RES, METAL	8.2k	1X	1/6W
1-215-444-00	s	RES, METAL	9.1k	1X	1/6W
1-215-445-00	s	RES, METAL	10k	1X	1/6W
1-215-446-00	s	RES, METAL	11k	1X	1/6W
1-215-447-00	s	RES, METAL	12k	1X	1/6W
1-215-448-00	s	RES, METAL	13k	1X	1/6W
1-215-449-00	s	RES, METAL	15k	1X	1/6W
1-215-450-00	s	RES, METAL	16k	1X	1/6W
1-215-451-00	s	RES, METAL	18k	1X	1/6W
1-215-452-00	s	RES, METAL	20k	1X	1/6W
1-215-453-00	s	RES, METAL	22k	1X	1/6W
1-215-454-00	s	RES, METAL	24k	1X	1/6W
1-215-455-00	s	RES, METAL	27k	1X	1/6W
1-215-456-00	s	RES, METAL	30k	1X	1/6W
1-215-457-00	s	RES, METAL	33k	1X	1/6W
1-215-458-00	s	RES, METAL	36k	1X	1/6W
1-215-459-00	s	RES, METAL	39k	1X	1/6W
1-215-460-00	s	RES, METAL	43k	1X	1/6W
1-215-461-00	s	RES, METAL	47k	1X	1/6W
1-215-462-00	s	RES, METAL	51k	1X	1/6W
1-215-463-00	s	RES, METAL	56k	1X	1/6W
1-215-464-00	s	RES, METAL	62k	1X	1/6W
1-215-465-00	s	RES, METAL	68k	1X	1/6W
1-215-466-00	s	RES, METAL	75k	1X	1/6W
1-215-467-00	s	RES, METAL	82k	1X	1/6W
1-215-468-00	s	RES, METAL	91k	1X	1/6W
1-215-469-00	s	RES, METAL	100k	1X	1/6W
1-215-470-00	s	RES, METAL	110k	1X	1/6W
1-215-471-00	s	RES, METAL	120k	1X	1/6W
1-215-472-00	s	RES, METAL	130k	1X	1/6W
1-215-473-00	s	RES, METAL	150k	1X	1/6W
1-215-474-00	s	RES, METAL	160k	1X	1/6W
1-215-475-00	s	RES, METAL	180k	1X	1/6W
1-215-476-00	s	RES, METAL	200k	1X	1/6W
1-215-477-00	s	RES, METAL	220k	1X	1/6W
1-215-478-00	s	RES, METAL	240k	1X	1/6W
1-215-479-00	s	RES, METAL	270k	1X	1/6W
1-215-480-00	s	RES, METAL	300k	1X	1/6W
1-215-481-00	s	RES, METAL	330k	1X	1/6W
1-215-482-00	s	RES, METAL	360k	1X	1/6W
1-215-483-00	s	RES, METAL	390k	1X	1/6W
1-215-484-00	s	RES, METAL	430k	1X	1/6W
1-215-485-00	s	RES, METAL	470k	1X	1/6W
1-215-486-00	s	RES, METAL	510k	1X	1/6W
1-215-487-00	s	RES, METAL	560k	1X	1/6W
1-215-488-00	s	RES, METAL	620k	1X	1/6W
1-215-489-00	s	RES, METAL	680k	1X	1/6W
1-215-490-00	s	RES, METAL	750k	1X	1/6W
1-215-491-00	s	RES, METAL	820k	1X	1/6W
1-215-492-00	s	RES, METAL	910k	1X	1/6W
1-215-493-00	s	RES, METAL	1.0M	1X	1/6W

Part No. SP Description

.CHIP

1-216-295-00 # RES, CHIP 0 5% 1/10W
 1-216-298-00 # RES, CHIP 2.2 5% 1/10W
 1-216-302-00 # RES, CHIP 2.7 5% 1/10W
 1-216-304-00 # RES, CHIP 3.3 5% 1/10W
 1-216-306-00 # RES, CHIP 3.9 5% 1/10W

 1-216-308-00 # RES, CHIP 4.7 5% 1/10W
 1-216-309-00 # RES, CHIP 5.6 5% 1/10W
 1-216-311-00 # RES, CHIP 6.8 5% 1/10W
 1-216-313-00 # RES, CHIP 8.2 5% 1/10W
 1-216-001-00 # RES, CHIP 10 5% 1/10W

 1-216-003-00 # RES, CHIP 12 5% 1/10W
 1-216-005-00 # RES, CHIP 15 5% 1/10W
 1-216-007-00 # RES, CHIP 18 5% 1/10W
 1-216-009-00 # RES, CHIP 22 5% 1/10W
 1-216-011-00 # RES, CHIP 27 5% 1/10W

 1-216-013-00 # RES, CHIP 33 5% 1/10W
 1-216-015-00 # RES, CHIP 39 5% 1/10W
 1-216-017-00 # RES, CHIP 47 5% 1/10W
 1-216-019-00 # RES, CHIP 56 5% 1/10W
 1-216-021-00 # RES, CHIP 68 5% 1/10W

 1-216-023-00 # RES, CHIP 82 5% 1/10W
 1-216-025-00 # RES, CHIP 100 5% 1/10W
 1-216-027-00 # RES, CHIP 120 5% 1/10W
 1-216-029-00 # RES, CHIP 150 5% 1/10W
 1-216-031-00 # RES, CHIP 180 5% 1/10W

 1-216-033-00 # RES, CHIP 220 5% 1/10W
 1-216-035-00 # RES, CHIP 270 5% 1/10W
 1-216-037-00 # RES, CHIP 330 5% 1/10W
 1-216-039-00 # RES, CHIP 390 5% 1/10W
 1-216-041-00 # RES, CHIP 470 5% 1/10W

 1-216-043-00 # RES, CHIP 560 5% 1/10W
 1-216-045-00 # RES, CHIP 680 5% 1/10W
 1-216-047-00 # RES, CHIP 820 5% 1/10W
 1-216-049-00 # RES, CHIP 1k 5% 1/10W
 1-216-051-00 # RES, CHIP 1.2k 5% 1/10W

 1-216-053-00 # RES, CHIP 1.5k 5% 1/10W
 1-216-055-00 # RES, CHIP 1.8k 5% 1/10W
 1-216-057-00 # RES, CHIP 2.2k 5% 1/10W
 1-216-059-00 # RES, CHIP 2.7k 5% 1/10W
 1-216-061-00 # RES, CHIP 3.3k 5% 1/10W

 1-216-063-00 # RES, CHIP 3.9k 5% 1/10W
 1-216-065-00 # RES, CHIP 4.7k 5% 1/10W
 1-216-067-00 # RES, CHIP 5.6k 5% 1/10W
 1-216-069-00 # RES, CHIP 6.8k 5% 1/10W
 1-216-071-00 # RES, CHIP 8.2k 5% 1/10W

 1-216-073-00 # RES, CHIP 10k 5% 1/10W
 1-216-075-00 # RES, CHIP 12k 5% 1/10W
 1-216-077-00 # RES, CHIP 15k 5% 1/10W
 1-216-079-00 # RES, CHIP 18k 5% 1/10W
 1-216-081-00 # RES, CHIP 22k 5% 1/10W

 1-216-083-00 # RES, CHIP 27k 5% 1/10W
 1-216-085-00 # RES, CHIP 33k 5% 1/10W
 1-216-087-00 # RES, CHIP 39k 5% 1/10W
 1-216-089-00 # RES, CHIP 47k 5% 1/10W
 1-216-091-00 # RES, CHIP 56k 5% 1/10W

Part No. SP Description

1-216-093-00 # RES, CHIP 68k 5% 1/10W
 1-216-095-00 # RES, CHIP 82k 5% 1/10W
 1-216-097-00 # RES, CHIP 100k 5% 1/10W
 1-216-099-00 # RES, CHIP 120k 5% 1/10W
 1-216-101-00 # RES, CHIP 150k 5% 1/10W

 1-216-103-00 # RES, CHIP 180k 5% 1/10W
 1-216-105-00 # RES, CHIP 220k 5% 1/10W
 1-216-107-00 # RES, CHIP 270k 5% 1/10W
 1-216-109-00 # RES, CHIP 330k 5% 1/10W
 1-216-111-00 # RES, CHIP 390k 5% 1/10W

 1-216-113-00 # RES, CHIP 470k 5% 1/10W
 1-216-115-00 # RES, CHIP 560k 5% 1/10W
 1-216-117-00 # RES, CHIP 680k 5% 1/10W
 1-216-119-00 # RES, CHIP 820k 5% 1/10W
 1-216-121-00 # RES, CHIP 1.0M 5% 1/10W

 1-216-123-00 # RES, CHIP 1.2M 5% 1/10W
 1-216-125-00 # RES, CHIP 1.5M 5% 1/10W
 1-216-127-00 # RES, CHIP 1.8M 5% 1/10W
 1-216-129-00 # RES, CHIP 2.2M 5% 1/10W
 1-216-131-00 # RES, CHIP 2.7M 5% 1/10W

 1-216-133-00 # RES, CHIP 3.3M 5% 1/10W

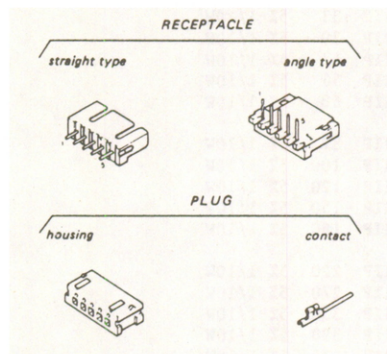
Part No. SP Description

CONNECTOR

1-564-001-11	o	RECEPTACLE	2P MALE (STRAIGHT TYPE)
1-564-012-11	o	RECEPTACLE	2P MALE (ANGLE TYPE)
1-562-147-11	o	HOUSING	2P
1-564-026-21	o	CONTACT	AWG24-30
1-564-681-21	o	CONTACT	AWG32
1-564-002-11	o	RECEPTACLE	3P MALE (STRAIGHT TYPE)
1-564-013-11	o	RECEPTACLE	3P MALE (ANGLE TYPE)
1-562-148-11	o	HOUSING	3P
1-564-026-21	o	CONTACT	AWG24-30
1-564-681-21	o	CONTACT	AWG32
1-564-003-11	o	RECEPTACLE	4P MALE (STRAIGHT TYPE)
1-564-014-11	o	RECEPTACLE	4P MALE (ANGLE TYPE)
1-562-149-11	o	HOUSING	4P
1-564-026-21	o	CONTACT	AWG24-30
1-564-681-21	o	CONTACT	AWG32
1-564-004-11	o	RECEPTACLE	5P MALE (STRAIGHT TYPE)
1-564-015-11	o	RECEPTACLE	5P MALE (ANGLE TYPE)
1-562-150-11	o	HOUSING	5P
1-564-026-21	o	CONTACT	AWG24-30
1-564-681-21	o	CONTACT	AWG32
1-564-005-11	o	RECEPTACLE	6P MALE (STRAIGHT TYPE)
1-564-016-11	o	RECEPTACLE	6P MALE (ANGLE TYPE)
1-562-151-11	o	HOUSING	6P
1-564-026-21	o	CONTACT	AWG24-30
1-564-681-21	o	CONTACT	AWG32
1-564-006-11	o	RECEPTACLE	7P MALE (STRAIGHT TYPE)
1-564-017-11	o	RECEPTACLE	7P MALE (ANGLE TYPE)
1-562-152-11	o	HOUSING	7P
1-564-026-21	o	CONTACT	AWG24-30
1-564-681-21	o	CONTACT	AWG32
1-564-007-11	o	RECEPTACLE	8P MALE (STRAIGHT TYPE)
1-564-018-11	o	RECEPTACLE	8P MALE (ANGLE TYPE)
1-562-153-11	o	HOUSING	8P
1-564-026-21	o	CONTACT	AWG24-30
1-564-681-21	o	CONTACT	AWG32
1-564-008-41	o	RECEPTACLE	9P MALE (STRAIGHT TYPE)
1-564-019-11	o	RECEPTACLE	9P MALE (ANGLE TYPE)
1-562-154-11	o	HOUSING	9P
1-564-026-21	o	CONTACT	AWG24-30
1-564-681-21	o	CONTACT	AWG32
1-564-009-11	o	RECEPTACLE	10P MALE (STRAIGHT TYPE)
1-564-020-11	o	RECEPTACLE	10P MALE (ANGLE TYPE)
1-562-155-11	o	HOUSING	10P
1-564-026-21	o	CONTACT	AWG24-30
1-564-681-21	o	CONTACT	AWG32
1-564-010-21	o	RECEPTACLE	11P MALE (STRAIGHT TYPE)
1-564-021-11	o	RECEPTACLE	11P MALE (ANGLE TYPE)
1-562-156-11	o	HOUSING	11P
1-564-026-21	o	CONTACT	AWG24-30
1-564-681-21	o	CONTACT	AWG32
1-564-011-11	o	RECEPTACLE	12P MALE (STRAIGHT TYPE)
1-564-022-11	o	RECEPTACLE	12P MALE (ANGLE TYPE)
1-562-157-11	o	HOUSING	12P
1-564-026-21	o	CONTACT	AWG24-30
1-564-681-21	o	CONTACT	AWG32

Part No. SP Description

1-564-683-11	o	RECEPTACLE	13P MALE (STRAIGHT TYPE)
1-564-743-11	o	RECEPTACLE	13P MALE (ANGLE TYPE)
1-562-627-11	o	HOUSING	13P
1-564-026-21	o	CONTACT	AWG24-30
1-564-681-21	o	CONTACT	AWG32
1-564-069-11	o	RECEPTACLE	14P MALE (STRAIGHT TYPE)
1-564-630-11	o	RECEPTACLE	14P MALE (ANGLE TYPE)
1-562-185-11	o	HOUSING	14P
1-564-026-21	o	CONTACT	AWG24-30
1-564-681-21	o	CONTACT	AWG32
1-564-855-11	o	RECEPTACLE	15P MALE (STRAIGHT TYPE)
1-564-877-11	o	RECEPTACLE	15P MALE (ANGLE TYPE)
1-562-958-11	o	HOUSING	15P
1-564-026-21	o	CONTACT	AWG24-30
1-564-681-21	o	CONTACT	AWG32



PARTS CHANGE INFORMATION

.In this parts list, **) marked parts are design-changed.
 .Applicable Serial No. are as follows:


- 1) Marked parts are for
 Serial No. 90001 thru 90700. (For EK)
- 2) Marked parts are for
 Serial No. 10001 and higher. (For EK)
 10001 and higher. (For UC)


Ref No. Parts No. SP Description

AC-65 BOARD (For UC)

1-618-591-11 o PRINTED CIRCUIT BOARD, AC-65

1-533-189-11 o HOLDER, FUSE

 CN1 1-506-371-00 o 2P PLUG (L)


 F1 1-532-743-11 s FUSE, GLASS TUBE 2.0A 125V

AC-89 BOARD (For EK)


1-622-786-11 o PRINTED CIRCUIT BOARD, AC-89

1-533-189-11 o HOLDER, FUSE

 C1 1-136-211-00 s FILM 0.022 20% 250V
 C2 1-136-185-00 s FILM 0.22 20% 250V

 CN1 1-506-371-00 o 2P PLUG (L)

 F1 1-532-203-00 s FUSE, TIME-LAG 2.0A 250V

 L1 1-421-556-21 s LINE FILTER

 R1 1-214-937-00 s CARBON 1M 5% 1/2W

CC-31 BOARD

1-622-255-11 o PRINTED CIRCUIT BOARD, CC-31

R1 1-247-705-11 s CARBON 270 5% 1/4W
 R2 1-247-717-11 s CARBON 2.2k 5% 1/4W
 R3 1-247-705-11 s CARBON 270 5% 1/4W
 R4 1-247-717-11 s CARBON 2.2k 5% 1/4W

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No. Parts No. SP Description

CC-32 BOARD

1-622-256-11 o PRINTED CIRCUIT BOARD, CC-32

IC1 8-719-940-86 s GP1L53 "CASSETTE IN DET"

CC-33 BOARD

1-622-257-11 o PRINTED CIRCUIT BOARD, CC-33

IC1 8-719-940-86 s GP1L53 "CASSETTE DOWN DET"

DC-31B BOARD (For UC)

1-622-221-31 o PRINTED CIRCUIT BOARD, DC-31B

1-533-189-11 o HOLDER, FUSE
1-561-432-00 o CONNECTOR CONTACT
1-561-424-11 o SOCKET, CONNECTOR 5P

C2 1-161-379-00 s CERAMIC 0.01 20% 16V

CN005 1-562-738-11 o HOUSING, CONNECTOR 5P

Ref No. Parts No. SP Description

DC-31C BOARD (For EK)

1-622-221-41 o PRINTED CIRCUIT BOARD, DC-31C

1-533-189-11 o HOLDER, FUSE
1-561-432-00 o CONNECTOR CONTACT
1-561-424-00 o SOCKET, CONNECTOR 5P

C2 1-161-379-00 s CERAMIC 0.01 20% 16V

CN005 1-562-738-11 o HOUSING, CONNECTOR 5P

F1 1-532-237-00 s FUSE, TIME LAG 3.15A 250V
F2 1-532-286-00 s FUSE, TIME LAG 2.5A 250V

IC1 8-759-938-15 s IC BA178M05

DUS-92 BOARD

1-615-924-11 o PRINTED CIRCUIT BOARD, DUS-92

H1003 8-825-578-41 s AUDIO HEAD (PS264-5803)

DUS-147 BOARD

1-622-261-11 o PRINTED CIRCUIT BOARD, DUS-147

EC-28 BOARD

1-622-223-11 o PRINTED CIRCUIT BOARD, EC-28

H1002 8-825-514-20 s CTL HEAD (PP170-58)

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No. Parts No. SP Description

KY-105D BOARD

A-6717-453-A o MOUNTED CIRCUIT BOARD, KY-105D

BT1 1-528-227-11 o BATTERY, LITHIUM (CR-2032)

C1 1-162-211-31 s CERAMIC 33PF 5% 50V
 C2 1-162-211-31 s CERAMIC 33PF 5% 50V
 C4 1-161-021-11 s CERAMIC 0.047 10% 25V
 C13 1-125-443-11 s ELECT 0.047 5.5V

D1 8-719-911-19 s 1SS119
 D2 8-719-911-19 s 1SS119
 D4 8-719-939-39 s GL-5HD5
 D5 8-719-911-19 s 1SS119
 D6 8-719-911-19 s 1SS119

D7 8-719-911-19 s 1SS119
 D8 8-719-939-39 s GL-5HD5
 D9 8-719-911-19 s 1SS119
 D10 8-719-911-19 s 1SS119
 D11 8-719-802-11 s TLUG154

D12 8-719-911-19 s 1SS119
 D14 8-719-911-19 s 1SS119
 D15 8-719-911-19 s 1SS119
 D18 8-719-939-39 s GL-5HD5
 D21 8-719-939-39 s GL-5HD5

D22 8-719-911-19 s 1SS119
 D23 8-719-911-19 s 1SS119
 D24 8-719-911-19 s 1SS119
 D25 8-719-939-39 s GL-5HD5
 D26 8-719-911-19 s 1SS119

D29 8-719-802-24 s TLUY154
 D30 8-719-802-24 s TLUY154
 D31 8-719-802-11 s TLUG154
 1) D32 8-719-911-19 s 1SS119
 1) D33 8-719-911-19 s 1SS119

D35 8-719-911-19 s 1SS119

IC1 8-759-645-17 s M54517P (MITSUBISHI)
 IC2 8-759-970-95 s MB88525-191M (FUJITSU)

L1 1-407-488-00 s 470uH

ND701 1-807-441-21 s LED BLOCK

Ref No. Parts No. SP Description

Q1 8-729-900-65 s DTAL44ES
 Q2 8-729-900-65 s DTAL44ES
 Q3 8-729-900-65 s DTAL44ES
 Q4 8-729-900-65 s DTAL44ES
 Q5 8-729-900-65 s DTAL44ES

Q6 8-729-900-65 s DTAL44ES
 Q7 8-729-117-54 s 2SA1175
 Q8 8-729-117-54 s 2SA1175
 Q9 8-729-117-54 s 2SA1175
 Q10 8-729-117-54 s 2SA1175

Q11 8-729-117-54 s 2SA1175
 Q13 8-729-117-54 s 2SA1175
 Q14 8-729-117-54 s 2SA1175
 Q15 8-729-900-65 s DTAL44ES
 Q16 8-729-900-65 s DTAL44ES

Q19 8-729-900-65 s DTAL44ES
 Q20 8-729-900-65 s DTAL44ES
 Q21 8-729-900-65 s DTAL44ES
 Q22 8-729-900-65 s DTAL44ES
 Q23 8-729-900-65 s DTAL44ES

Q24 8-729-900-65 s DTAL44ES
 2) Q40 8-729-201-04 s 2SC2878
 2) Q41 8-719-201-04 s 2SC2878

R75 1-247-736-11 s CARBON 56 5% 1/2W

S1 1-570-145-11 s LEVER SLIDE "FRAME/CTL"
 S2 1-553-739-21 s KEY "RESET"
 S3 1-552-539-00 s KEY "F.SEARCH"
 S4 1-553-739-21 s KEY "MARK A"
 S5 1-553-739-21 s KEY "MARK B"

S6 1-552-539-00 s KEY "R.SEARCH"
 S7 1-516-995-00 s LEVER SLIDE "PROGRAM OPERATION"
 S8 1-552-539-00 s KEY "PAUSE"
 S10 1-552-539-00 s KEY "FF"
 S12 1-552-539-00 s KEY "PLAY"

S13 1-552-539-00 s KEY "REW"
 S14 1-552-539-00 s KEY "EJECT"
 S15 1-552-539-00 s KEY "STOP"
 S18 1-516-298-00 s LEVER SLIDE "AUDIO MONITOR"

X1 1-567-143-00 s CERAMIC, 6MHz

LM-13 BOARD

1-618-600-11 o PRINTED CIRCUIT BOARD, LM-13

C1 1-130-471-00 s PE TEREPHTHALATE 0.001 5% 50V
 C2 1-130-471-00 s PE TEREPHTHALATE 0.001 5% 50V

M1003 1-541-376-11 s DC (DNR-4700A) "THREADING"

Parts that are not listed in the "reference number order list"
 are shown in the "General Purpose Electrical Parts List".

Ref No. Parts No. SP Description

LP-41 BOARD

1-623-101-11 o PRINTED CIRCUIT BOARD, LP-41

1) D1 8-719-800-89 s TLY255
1) D2 8-719-800-89 s TLY255
1) D3 8-719-800-89 s TLY255

R1 1-247-706-11 s CARBON 330 5% 1/4W
R2 1-247-706-11 s CARBON 330 5% 1/4W
R3 1-247-706-11 s CARBON 330 5% 1/4W

PD-40A BOARD

A-6725-571-A o MOUNTED CIRCUIT BOARD, PD-40A

D1 8-719-200-02 s 10E-2
D2 8-719-200-02 s 10E-2
D3 8-719-200-02 s 10E-2
D4 8-719-200-02 s 10E-2
D5 8-719-200-02 s 10E-2

D6 8-719-200-02 s 10E-2
D7 8-719-200-02 s 10E-2
D8 8-719-200-02 s 10E-2
D10 8-719-200-02 s 10E-2
D11 8-719-200-02 s 10E-2


D12 8-719-200-02 s 10E-2
D13 8-719-200-02 s 10E-2

Q1 8-729-811-11 s 2SD1111
Q2 8-729-178-54 s 2SC2785
Q3 8-729-889-40 s 2SD894
Q4 8-729-811-11 s 2SD1111
Q5 8-729-178-54 s 2SC2785

Q6 8-729-889-40 s 2SD894
Q8 8-729-811-11 s 2SD1111
Q9 8-729-178-54 s 2SC2785
Q10 8-729-199-82 s 2SD998
Q11 8-729-811-11 s 2SD1111

Q12 8-729-178-54 s 2SC2785
Q13 8-729-178-54 s 2SC2785
Q14 8-729-199-82 s 2SD998

Ref No. Parts No. SP Description

 R6 1-532-685-00 s LINK, IC
R12 1-532-685-00 s LINK, IC
R19 1-532-685-00 s LINK, IC
R25 1-532-685-00 s LINK, IC

PD-41 BOARD


A-6725-570-A o MOUNTED CIRCUIT BOARD, PD-41

D1 8-719-200-02 s 10E-2
D2 8-719-200-02 s 10E-2
D3 8-719-200-02 s 10E-2
D4 8-719-200-02 s 10E-2
D5 8-719-200-02 s 10E-2

D6 8-719-200-02 s 10E-2

Q1 8-729-811-11 s 2SD1111
Q2 8-729-178-54 s 2SC2785
Q3 8-729-889-40 s 2SD894
Q4 8-729-811-11 s 2SD1111
Q5 8-729-178-54 s 2SC2785

Q6 8-729-889-40 s 2SD894

 R6 1-532-685-00 s LINK, IC
R12 1-532-685-00 s LINK, IC

PH-5 BOARD

1-603-737-00 o PRINTED CIRCUIT BOARD, PH-5

D1 8-719-905-56 s BR5104S

Q1 8-729-810-22 s SPS102

PT-9 BOARD

1-605-018-00 o PRINTED CIRCUIT BOARD, PT-9

Q1 8-729-377-13 s 2SA771-Y

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No. Parts No. SP Description

PTC-33 BOARD

1-622-258-11 o PRINTED CIRCUIT BOARD, PTC-33

IC1 8-719-940-86 s GP1L53 "THREAD END DET"
 IC2 8-719-940-86 s GP1L53 "UNTHREAD END DET"

PTC-34 BOARD

1-622-259-11 o PRINTED CIRCUIT BOARD, PTC-34

IC1 8-719-940-86 s GP1L53 "FR UNTHREAD END DET"

PTC-35 BOARD

1-622-218-11 o PRINTED CIRCUIT BOARD, PTC-35

IC1A 8-719-940-86 s GP1L53 "TAKE-UP ROTATION DET"
 IC1B 8-719-940-86 s GP1L53 "SUPPLY ROTATION DET"

RM-39 BOARD

1-618-873-11 o PRINTED CIRCUIT BOARD, RM-39

C1 1-101-006-00 s CERAMIC 0.047 50V
 C2 1-101-006-00 s CERAMIC 0.047 50V

L1 1-410-623-11 s 4.7uH
 L2 1-410-623-11 s 4.7uH

M1006 8-835-178-01 s DC FN30-T26N1E "REEL"

SE-46 BOARD

1-618-599-11 o PRINTED CIRCUIT BOARD, SE-46

PC1 1-806-232-21 s DETECTOR MB-1102/S.N

Ref No. Parts No. SP Description

SV-93D BOARD

A-6715-365-A o MOUNTED CIRCUIT BOARD, SV-93D

C3 1-124-499-11 s ELECT 1 20X 50V
 C6 1-161-377-00 s CERAMIC 0.0047 30X 16V
 C7 1-161-374-11 s CERAMIC 0.0015 30X 16V
 C8 1-130-493-00 s MYLAR 0.068 5X 50V
 C10 1-131-352-00 s TANTALUM 6.8 10X 35V

C12 1-162-299-21 s CERAMIC 0.0068 30X 16V
 C14 1-161-021-11 s CERAMIC 0.047 10X 25V
 C17 1-161-057-00 s CERAMIC 0.033 10X 25V
 C18 1-161-013-00 s CERAMIC 0.01 10X 25V
 C19 1-161-013-00 s CERAMIC 0.01 10X 25V

C104 1-162-215-31 s CERAMIC 47PF 5X 50V
 C106 1-161-047-00 s CERAMIC 0.0047 10X 25V
 C111 1-161-042-00 s CERAMIC 0.0018 10X 25V
 C112 1-161-042-00 s CERAMIC 0.0018 10X 25V
 C116 1-162-286-31 s CERAMIC 220PF 10X 50V

C120 1-162-288-31 s CERAMIC 330PF 10X 50V
 C203 1-162-211-31 s CERAMIC 33PF 5X 50V
 C204 1-162-211-31 s CERAMIC 33PF 5X 50V
 C301 1-161-013-00 s CERAMIC 0.01 10X 25V
 C302 1-161-040-00 s CERAMIC 0.0012 10X 25V

C303 1-130-483-00 s MYLAR 0.01 5X 50V
 C306 1-162-286-31 s CERAMIC 220PF 10X 50V
 C307 1-162-288-31 s CERAMIC 330PF 10X 50V
 C308 1-161-013-00 s CERAMIC 0.01 10X 25V
 C309 1-161-013-00 s CERAMIC 0.01 10X 25V

C312 1-124-499-11 s ELECT 1 20X 50V
 C409 1-161-379-00 s CERAMIC 0.01 30X 16V
 C410 1-161-379-00 s CERAMIC 0.01 30X 16V
 C411 1-162-207-31 s CERAMIC 22PF 5X 50V
 C412 1-162-282-31 s CERAMIC 100PF 10X 50V

C413 1-162-284-31 s CERAMIC 150PF 10X 50V
 C418 1-162-282-31 s CERAMIC 100PF 10X 50V
 C422 1-124-464-11 s ELECT 0.22 20X 50V
 C423 1-162-289-31 s CERAMIC 390PF 10X 50V
 C430 1-124-463-00 s ELECT 0.1 20X 50V

C507 1-162-286-31 s CERAMIC 220PF 10X 50V
 C702 1-161-282-31 s CERAMIC 100P 30X 16V
 C703 1-161-379-00 s CERAMIC 0.01 30X 16V
 C704 1-161-379-00 s CERAMIC 0.01 30X 16V
 C705 1-161-379-00 s CERAMIC 0.01 30X 16V

C709 1-161-379-00 s CERAMIC 0.01 30X 16V
 C710 1-161-379-00 s CERAMIC 0.01 30X 16V
 C711 1-161-379-00 s CERAMIC 0.01 30X 16V
 C712 1-161-379-00 s CERAMIC 0.01 30X 16V
 C714 1-161-379-00 s CERAMIC 0.01 30X 16V

C716 1-161-379-00 s CERAMIC 0.01 30X 16V
 C718 1-161-379-00 s CERAMIC 0.01 30X 16V
 C719 1-161-039-00 s CERAMIC 0.001 10X 25V

Parts that are not listed in the "reference number order list"
 are shown in the "General Purpose Electrical Parts List".

Ref No.	Parts No.	SP	Description	Ref No.	Parts No.	SP	Description
D1	8-719-911-19	s	1SS119	Q1	8-729-178-54	s	2SC2785
D2	8-719-911-19	s	1SS119	Q2	8-729-117-54	s	2SA1175-K
D3	8-719-911-19	s	1SS119	Q3	8-729-376-84	s	2SA768-G
D4	8-719-911-19	s	1SS119	Q4	8-729-804-91	s	2SD1682-S
D5	8-719-911-19	s	1SS119	Q5	8-729-177-42	s	2SD774-3
D6	8-719-911-19	s	1SS119	1) Q101	8-729-900-83	s	DTC124XS
D7	8-719-911-55	s	U05G	2) Q101	8-729-900-89	s	DTC144ES
D101	8-719-911-19	s	1SS119	Q102	8-729-178-54	s	2SC2785
D103	8-719-911-19	s	1SS119	Q103	8-729-900-83	s	DTC124XS
D104	8-719-911-19	s	1SS119	Q104	8-729-117-54	s	2SA1175-K
D105	8-719-911-19	s	1SS119	2) Q105	8-729-178-54	s	2SC2785
D106	8-719-911-19	s	1SS119	Q106	8-729-178-54	s	2SC2785
D107	8-719-911-19	s	1SS119	Q107	8-729-105-73	s	2SK523-L2
D108	8-719-911-19	s	1SS119	Q108	8-729-900-83	s	DTC124XS
D109	8-719-911-19	s	1SS119	Q109	8-729-900-89	s	DTC144ES
D110	8-719-911-19	s	1SS119	Q110	8-729-178-54	s	2SC2785
D111	8-719-911-19	s	1SS119	Q111	8-729-376-84	s	2SA768-G
D112	8-719-911-19	s	1SS119	Q112	8-729-117-54	s	2SA1175-K
D113	8-719-911-19	s	1SS119	Q113	8-729-804-91	s	2SD1682-S
D201	8-719-911-19	s	1SS119	Q114	8-729-900-67	s	DTA124XS
D204	8-719-911-19	s	1SS119	Q201	8-729-900-83	s	DTC124XS
D205	8-719-911-19	s	1SS119	Q202	8-729-900-83	s	DTC124XS
D206	8-719-911-19	s	1SS119	Q203	8-729-900-83	s	DTC124XS
D207	8-719-911-19	s	1SS119	Q204	8-729-900-83	s	DTC124XS
D210	8-719-100-15	s	RD3.0E-B2	Q205	8-729-900-83	s	DTC124XS
D211	8-719-911-19	s	1SS119	Q206	8-729-900-83	s	DTC124XS
D303	8-719-911-19	s	1SS119	Q304	8-729-178-54	s	2SC2785
D401	8-719-911-19	s	1SS119	Q401	8-729-178-54	s	2SC2785
D402	8-719-911-19	s	1SS119	Q403	8-729-178-54	s	2SC2785
D405	8-719-911-19	s	1SS119	Q404	8-729-178-54	s	2SC2785
D406	8-719-911-19	s	1SS119	Q408	8-729-603-50	s	2SC403SP
D407	8-719-911-19	s	1SS119	Q411	8-729-178-54	s	2SC2785
D408	8-719-911-19	s	1SS119	Q412	8-729-178-54	s	2SC2785
D409	8-719-911-19	s	1SS119	Q501	8-729-603-50	s	2SC403SP
D410	8-719-911-19	s	1SS119				
D411	8-719-911-19	s	1SS119	R12	1-247-895-00	s	CARBON 470k 5% 1/4W
2) D600	8-719-911-19	s	1SS119	R13	1-247-881-00	s	CARBON 120k 5% 1/4W
				R16	1-247-849-00	s	CARBON 5.6k 5% 1/4W
				R17	1-247-895-00	s	CARBON 470k 5% 1/4W
				R36	1-247-887-00	s	CARBON 220k 5% 1/4W
IC1	8-759-132-40	s	UPC324C (NEC)	△ R42	1-207-621-00	s	WIREWOUND 1.5 10% 3W
IC2	8-759-700-08	s	NJM4558S (JRC)	R125	1-247-887-00	s	CARBON 220k 5% 1/4W
IC3	8-759-705-58	s	NJM4558D-D (JRC)	R147	1-247-895-00	s	CARBON 470k 5% 1/4W
IC5	8-759-208-10	s	TC4053BPHB (TOSHIBA)	R151	1-247-891-00	s	CARBON 330k 5% 1/4W
IC6	8-759-208-10	s	TC4053BPHB (TOSHIBA)	R162	1-247-895-00	s	CARBON 470k 5% 1/4W
IC8	8-759-132-40	s	UPC324C (NEC)	R172	1-247-891-00	s	CARBON 330k 5% 1/4W
IC9	8-759-132-40	s	UPC324C (NEC)	R176	1-247-887-00	s	CARBON 220k 5% 1/4W
IC10	8-759-133-90	s	UPC339C (NEC)	R178	1-247-895-00	s	CARBON 470k 5% 1/4W
IC11	8-759-240-30	s	TC4030BP (TOSHIBA)	R260	1-247-895-00	s	CARBON 470k 5% 1/4W
IC12	8-759-135-80	s	UPC358C (NEC)	R306	1-247-895-00	s	CARBON 470k 5% 1/4W
IC13	8-759-208-10	s	TC4053BPHB (TOSHIBA)	R311	1-247-895-00	s	CARBON 470k 5% 1/4W
IC14	8-759-205-76	s	TC504013BP (TOSHIBA)	△ R461	1-207-636-00	s	WIREWOUND 100 10% 3W
IC15	8-759-200-01	s	TC4001UBP (TOSHIBA)	R507	1-247-849-00	s	CARBON 5.6k 5% 1/4W
IC17	8-751-941-05	s	CX194B-5 (SONY)	R600	1-532-685-00	s	LINK IC
IC18	8-759-945-41	s	MB88505-547M (FUJITSU)				
IC19	8-759-240-30	s	TC4030BP (TOSHIBA)				
IC20	8-759-208-10	s	TC4053BPHB (TOSHIBA)				
IC21	8-743-915-10	s	BX-3915A (SONY)				

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No. Parts No. SP Description

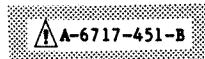
RV1 1-228-994-00 s VAR, METAL GLAZE 10k
 RV2 1-228-990-00 s VAR, CARBON 1k
 RV3 1-228-990-00 s VAR, CARBON 1k
 RV100 1-228-993-00 s VAR, METAL GLAZE 4.7k
 RV101 1-228-994-00 s VAR, METAL GLAZE 10k

RV102 1-228-994-00 s VAR, METAL GLAZE 10k
 RV105 1-228-995-00 s VAR, CARBON 22k
 RV106 1-228-993-00 s VAR, CARBON 4.7k
 RV107 1-228-995-00 s VAR, CARBON 22k
 RV201 1-228-990-00 s VAR, CARBON 1k

RV401 1-228-996-00 s VAR, CARBON 47k
 RV402 1-228-996-00 s VAR, CARBON 47k
 RV403 1-228-996-00 s VAR, CARBON 47k
 RV404 1-228-996-00 s VAR, CARBON 47k
 RV405 1-228-996-00 s VAR, CARBON 47k

RV406 1-228-997-00 s VAR, CARBON 100k
 RV407 1-228-997-00 s VAR, CARBON 100k

X1 1-527-376-00 s CRYSTAL
 X2 1-527-734-00 s CRYSTAL 6MHz

SY-106B BOARD

o MOUNTED CIRCUIT BOARD, SY-106B

C2 1-161-021-11 s CERAMIC 0.047 10% 25V
 C3 1-161-013-00 s CERAMIC 0.01 10% 25V
 C4 1-161-041-00 s CERAMIC 0.0015 10% 25V
 C5 1-161-013-00 s CERAMIC 0.01 10% 25V
 C6 1-161-055-00 s CERAMIC 0.022 10% 25V
 C10 1-162-286-31 s CERAMIC 220PF 10% 50V
 C11 1-131-347-00 s AL SOLID ELECT 1 10% 16V
 C14 1-162-286-31 s CERAMIC 220PF 10% 50V
 C15 1-161-020-11 s CERAMIC 0.039 10% 25V
 C17 1-131-347-00 s AL SOLID ELECT 1 10% 16V
 C18 1-131-358-00 s TANTALUM 6.8 10% 25V
 C19 1-161-013-00 s CERAMIC 0.01 10% 25V
 C20 1-161-057-00 s CERAMIC 0.033 10% 25V
 C21 1-161-013-00 s CERAMIC 0.01 10% 25V
 C22 1-162-216-31 s CERAMIC 51PF 5% 50V
 C23 1-124-499-11 s ELECT 1 20% 50V
 C24 1-123-875-11 s ELECT 10 20% 50V
 C30 1-124-499-11 s ELECT 1 20% 50V
 C31 1-161-039-00 s CERAMIC 0.001 10% 25V
 C32 1-162-211-31 s CERAMIC 33PF 5% 50V
 C33 1-161-021-11 s CERAMIC 0.047 10% 25V
 C34 1-161-039-00 s CERAMIC 0.001 10% 25V
 C36 1-161-021-11 s CERAMIC 0.047 10% 25V
 C37 1-162-211-31 s CERAMIC 33PF 5% 50V
 C38 1-161-055-00 s CERAMIC 0.022 10% 25V

Ref No. Parts No. SP Description

C42 1-161-021-11 s CERAMIC 0.047 10% 25V
 C46 1-162-290-31 s CERAMIC 470PF 10% 50V
 C47 1-162-210-31 s CERAMIC 30PF 5% 50V
 C48 1-162-210-31 s CERAMIC 30PF 5% 50V
 C49 1-124-499-11 s ELECT 1 20% 50V

C50 1-124-499-11 s ELECT 1 20% 50V
 C55 1-162-290-31 s CERAMIC 470PF 10% 50V

CN507 1-506-821-11 o HOUSING, BOARD IN CONNECTOR 12P
 1-563-186-11 o HOUSING, CONNECTOR 12P
 CN508 1-506-821-11 o HOUSING, BOARD IN CONNECTOR 12P
 1-563-186-11 o HOUSING, CONNECTOR 12P

D1 8-719-911-19 s 1SS119
 D2 8-719-911-19 s 1SS119
 D3 8-719-911-19 s 1SS119
 D4 8-719-911-19 s 1SS119
 D5 8-719-911-19 s 1SS119

D6 8-719-911-19 s 1SS119
 D7 8-719-911-19 s 1SS119
 D8 8-719-911-19 s 1SS119
 D9 8-719-911-19 s 1SS119
 D10 8-719-911-19 s 1SS119

D11 8-719-911-19 s 1SS119
 D12 8-719-911-19 s 1SS119
 D13 8-719-911-19 s 1SS119
 D14 8-719-911-19 s 1SS119
 D15 8-719-911-19 s 1SS119

D16 8-719-911-19 s 1SS119
 D17 8-719-911-19 s 1SS119
 D18 8-719-911-19 s 1SS119
 D20 8-719-911-19 s 1SS119
 D21 8-719-911-55 s U05-G

D22 8-719-911-55 s U05-G
 D23 8-719-911-55 s U05-G
 D24 8-719-911-19 s 1SS119
 D25 8-719-911-19 s 1SS119
 D26 8-719-911-19 s 1SS119

D31 8-719-911-19 s 1SS119
 D32 8-719-911-19 s 1SS119
 D33 8-719-911-19 s 1SS119

IC1 8-759-145-58 s UPC4558C (NEC)
 IC2 8-759-145-58 s UPC4558C (NEC)
 IC3 8-759-345-38 s HD14538BP (HITACHI)
 IC4 8-759-135-80 s UPC358C (NEC)
 IC5 8-759-145-58 s UPC4558C (NEC)

IC7 8-759-970-94 s MB88525-184M (FUJITSU)
 IC8 8-759-729-03 s NJM2903D (JRC)
 IC9 8-759-600-24 s M54543L (MITSUBISHI)
 IC10 8-759-600-24 s M54543L (MITSUBISHI)

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No.	Parts No.	SP	Description
IC11	8-759-240-69	s	TC4069UBP (TOSHIBA)
IC12	8-759-970-93	s	MB88505-571M (FUJITSU)
IC13	8-759-220-00	s	TC40H000P (TOSHIBA)
IC14	8-759-913-99	s	MB88201-173N (FUJITSU)
IC15	8-759-729-03	s	NJM2903D (JRC)
IC18	8-759-240-69	s	TC4069UBP (TOSHIBA)
IC19	8-759-345-38	s	HD14538BP (HITACHI)
IC20	8-759-202-55	s	TC74HC244P (TOSHIBA)

Q1	8-729-177-42	s	2SD774-3
Q3	8-729-889-40	s	2SD894
Q4	8-729-178-54	s	2SC2785
Q5	8-729-178-54	s	2SC2785
Q6	8-729-178-54	s	2SC2785
Q7	8-729-178-54	s	2SC2785
Q8	8-729-178-54	s	2SC2785
Q9	8-729-900-89	s	DTC144ES
Q10	8-729-117-54	s	2SA1175
Q11	8-729-900-89	s	DTC144ES

Q12	8-729-175-54	s	2SA1175
Q13	8-729-900-89	s	DTC144ES
Q14	8-729-900-89	s	DTC144ES
Q15	8-729-178-54	s	2SC2785
Q16	8-729-178-54	s	2SC2785

Q17	8-729-900-89	s	DTC144ES
Q18	8-729-900-89	s	DTC144ES
Q19	8-729-900-89	s	DTC144ES
Q20	8-729-178-54	s	2SC2785
Q23	8-729-900-89	s	DTC144ES

Q24	8-729-900-89	s	DTC144ES
Q26	8-729-178-54	s	2SC2785
Q27	8-729-178-54	s	2SC2785
Q28	8-729-117-54	s	2SA1175
Q29	8-729-178-54	s	2SC2785

Q31	8-729-178-54	s	2SC2785
Q35	8-729-382-64	s	2SC1826-G
Q36	8-729-900-89	s	DTC144ES
Q37	8-729-900-89	s	DTC144ES
Q38	8-729-900-89	s	DTC144ES

Q44	8-729-811-11	s	2SD1111
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R11	1-207-674-00	s	WIREWOUND 4.7 10% 6W
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R13	1-247-895-00	s	CARBON 470k 5% 1/4W
R24	1-247-895-00	s	CARBON 470k 5% 1/4W
R32	1-247-891-00	s	CARBON 330k 5% 1/4W
R33	1-247-883-00	s	CARBON 150k 5% 1/4W

R38	1-247-891-00	s	CARBON 330k 5% 1/4W
R40	1-247-887-00	s	CARBON 220k 5% 1/4W
R41	1-247-701-11	s	CARBON 120 5% 1/4W
R47	1-247-889-00	s	CARBON 270k 5% 1/4W
R48	1-247-889-00	s	CARBON 270k 5% 1/4W

Ref No.	Parts No.	SP	Description
R76	1-247-887-00	s	CARBON 220k 5% 1/4W
R85	1-247-887-00	s	CARBON 220k 5% 1/4W
R112	1-247-700-11	s	CARBON 100 5% 1/4W
R159	1-214-853-00	s	METAL 360 1% 1/2W
R160	1-214-852-00	s	METAL 330 1% 1/2W
R189	1-247-887-00	s	CARBON 220k 5% 1/4W
R192	1-532-637-00	s	LINK, IC
R201	1-532-605-00	s	LINK, IC
R204	1-532-637-00	s	LINK, IC
R300	1-532-769-21	s	FUSE, MICRO 0.2A

RV1	1-230-722-11	s	VAR, CARBON 22k
RV2	1-230-720-11	s	VAR, CARBON 4.7k
RV3	1-230-720-11	s	VAR, CARBON 4.7k
RV4	1-230-722-11	s	VAR, CARBON 22k

SW1	1-552-509-00	s	DIP
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X1	1-567-143-00	s	CERAMIC 6MHz
X2	1-567-192-11	s	CERAMIC 4MHz

TG-22 BOARD

1-618-597-11	o	PRINTED CIRCUIT BOARD, TG-22
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D1	8-719-939-39	s	GL-5HD5
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435-A BOARD (For UC)

1-413-259-11	s	SWITCHING REGULATOR
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C101	1-161-741-00	s	CERAMIC 1000PF 125V AC
C102	1-161-741-00	s	CERAMIC 1000PF 125V AC
C103	1-161-741-00	s	CERAMIC 1000PF 125V AC

C104	1-161-741-00	s	CERAMIC 1000PF 125V AC
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C105	1-136-212-12	s	FILM 0.1 250V AC
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C106	9-992-659-01	s	ELECT 470 200V
C107	9-992-660-01	s	CERAMIC 1000PF 2kv
C108	1-136-206-11	s	FILM 0.033 400V
C109	1-129-793-00	s	FILM 0.047 100V
C110	1-126-176-11	s	ELECT 220 10V

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No. Parts No. SP Description

△ C113 1-136-212-12 s FILM 0.1 250V AC
 C204 9-992-661-01 s ELECT 4700 16V
 C205 9-992-661-01 s ELECT 4700 16V
 C206 9-992-662-01 s ELECT 6800 10V
 C209 9-992-663-01 s FILM 2200PF 100V

C210 1-123-875-11 s ELECT 10 50V

△ CN101 1-560-436-00 o CONNECTOR, 3P
 CN201 1-560-438-00 s CONNECTOR, 5P

D101 9-992-664-01 s REV-404
 D102 9-992-665-01 s 10DF4
 D103 9-990-696-01 s 1S1588V
 D104 9-990-696-01 s 1S1588V
 D105 9-990-696-01 s 1S1588V

D107 8-719-815-85 s 1S1585
 D201 9-992-666-01 s CBP06Q
 D202 9-992-666-01 s CBP06Q
 D203 9-992-665-01 s 10DF4
 D205 8-719-100-65 s RD12E-B2

IC201 8-759-914-44 s TL431CLPB
 IC202 8-759-135-80 s UPC358C

△ L101 9-992-669-01 s FILTER, LINE
 L102 9-992-669-01 s FILTER, LINE
 L201 9-992-670-01 s CHOKE 10
 L202 9-992-670-01 s CHOKE 10
 L203 9-992-670-01 s CHOKE 10

△ PC101 8-719-902-56 s PHOTOCOUPLER RC817
 PC102 9-992-67-01 s PHOTOCOUPLER S12MD1

Q101 9-988-715-01 s 2SC3320
 Q102 8-729-133-33 s 2SC2333
 Q103 8-729-201-52 s 2SA1015
 Q104 8-729-265-52 s 2SC2655
 Q105 8-729-265-52 s 2SC2655
 Q201 8-729-281-52 s 2SC1815-Y

Ref No. Parts No. SP Description

△ R101 9-992-653-01 s WIREWOUND 0.47 10% 5W
 R102 9-992-653-01 s WIREWOUND 0.47 10% 5W

R103 9-992-654-01 s WIREWOUND 100 10% 5W
 R104 1-216-468-11 s METAL 82k 5% 2W
 R105 1-214-596-00 s METAL 39k 5% 2W

R106 1-216-451-11 s METAL 120 5% 2W
 R107 1-247-725-11 s CARBON 10k 5% 1/4W
 R108 1-247-713-11 s CARBON 1k 5% 1/4W
 R109 1-249-455-11 s CARBON 4.7k 5% 1/4W
 R113 1-247-713-11 s CARBON 1k 5% 1/4W

R116 1-247-713-11 s CARBON 1k 5% 1/4W
 R117 1-249-455-11 s CARBON 4.7k 5% 1/4W
 R119 1-249-417-11 s CARBON 1k 5% 1/6W
 R110 9-992-655-01 s WIREWOUND 0.1 10% 2W
 R111 1-247-695-11 s CARBON 39 5% 1/4W

R112 1-247-712-11 s CARBON 820 5% 1/4W
 R114 1-247-710-11 s CARBON 560 5% 1/4W
 R115 1-247-704-11 s CARBON 220 5% 1/4W
 R118 1-249-433-11 s CARBON 22k 5% 1/6W
 R201 9-992-657-01 s CARBON 220 5% 1W

R202 9-992-657-01 s CARBON 220 5% 1W
 R205 9-992-656-01 s WIREWOUND 10m 2W

△ R218 1-212-857-00 s FUSIBLE 10 5% 1/4W

RV201 1-228-990-00 s RES, ADJ 1k

△ T101 9-992-668-01 s TRANSFORMER, CONV.

UR-14 BOARD (For UC)

△ 1-413-248-11 s SWITCHING REGULATOR, UR-14

△ C101 1-161-742-00 s CERAMIC 2200PF 20% 400V
 C102 1-161-742-00 s CERAMIC 2200PF 20% 400V
 C103 1-161-742-00 s CERAMIC 2200PF 20% 400V
 C104 1-161-742-00 s CERAMIC 2200PF 20% 400V
 C105 1-136-212-00 s MYLAR 0.1 20% 250V


△ C106 1-136-212-00 s MYLAR 0.1 20% 250V
 C107 1-161-742-00 s CERAMIC 2200PF 20% 400V
 C108 1-161-742-00 s CERAMIC 2200PF 20% 400V

C109 1-124-961-00 s ELECT 220 20% 200V
 C110 1-124-023-00 s ELECT 4.7 20% 350V


Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".


Ref No.	Parts No.	SP	Description
C111	1-124-023-00	s	ELECT 4.7 20% 350V
C112	1-124-549-00	s	ELECT 100 20% 10V
C113	1-124-961-00	s	ELECT 220 20% 200V
C114	1-124-549-00	s	ELECT 100 20% 10V
C201	1-108-413-00	s	MYLAR 2200PF 10% 200V
C202	1-108-413-00	s	MYLAR 2200PF 10% 200V
C203	1-161-825-11	s	CERAMIC 220PF 10% 500V
C204	1-161-825-11	s	CERAMIC 220PF 10% 500V
C205	1-161-825-11	s	CERAMIC 220PF 10% 500V
C206	1-161-825-11	s	CERAMIC 220PF 10% 500V
C207	1-123-357-00	s	ELECT 22 20% 50V
C209	1-108-413-00	s	MYLAR 2200PF 10% 200V
C210	1-136-153-00	s	MYLAR 0.01 5% 50V
C211	1-130-516-00	s	MYLAR 0.01 5% 50V
C212	1-124-556-00	s	ELECT 2200 20% 16V
C213	1-124-556-00	s	ELECT 2200 20% 16V
C214	1-124-556-00	s	ELECT 2200 20% 16V
C215	1-124-556-00	s	ELECT 2200 20% 16V
C216	1-123-326-00	s	ELECT 3300 20% 16V
C217	1-123-332-00	s	ELECT 47 20% 50V
C651	1-124-445-00	s	ELECT 100 20% 16V
C652	1-130-591-11	s	MYLAR 3300PF 2% 100V
C653	1-136-141-00	s	MYLAR 1000PF 10% 50V
C654	1-136-165-00	s	MYLAR 0.1 5% 50V
C655	1-123-318-00	s	ELECT 33 16V

Ref No.	Parts No.	SP	Description
FB204	1-543-060-00	s	CORE
FB205	1-543-060-00	s	CORE
FB206	1-543-060-00	s	CORE
FB207	1-543-060-00	s	CORE
FB208	1-543-060-00	s	CORE
FB209	1-543-060-00	s	CORE
IC651	8-759-937-00	s	MB3759 (FUJITSU)

	L101	1-421-848-11	s	LINE FILTER
	L201	1-421-849-11	s	CHOKE, 2.4mH
	L203	1-408-316-00	s	CHOKE
	L204	1-421-850-11	s	CHOKE, 12
	L205	1-421-329-00	s	CHOKE



UR-14E BOARD (For EK)

	1-413-249-12	s	SWITCHING REGULATOR, UR-14E
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	CN101	1-560-436-00	o	RECEPTACLE, 3P
		1-561-218-11	o	HOUSING, 3P
		1-561-254-11	o	CONTACT
	CN201	1-560-438-00	o	RECEPTACLE, 5P
		1-561-424-11	o	HOUSING, 5P
		1-561-254-11	o	CONTACT

D101	8-719-300-00	s	LB-156
D201	8-719-908-00	s	ESAC33-02CS
D202	8-719-908-00	s	ESAC33-02CS
D203	8-719-900-93	s	V09C
D204	8-719-900-93	s	V09C
D205	8-719-815-55	s	1S1555
D206	8-719-100-61	s	RD11EB2
D208	8-719-101-67	s	RD7.5EL2
D209	8-719-100-30	s	RD5.1EB2
D210	8-719-100-30	s	RD5.1EB2
D651	8-719-200-02	s	10E-2
D652	8-719-100-70	s	RD15EB1
D653	8-719-815-55	s	1S1555

FB101	1-543-060-00	s	CORE
FB102	1-543-060-00	s	CORE
FB201	1-543-060-00	s	CORE
FB202	1-543-060-00	s	CORE
FB203	1-543-060-00	s	CORE

	C101	1-161-742-00	s	CERAMIC 2200PF 20% 400V
	C102	1-161-742-00	s	CERAMIC 2200PF 20% 400V
	C103	1-161-742-00	s	CERAMIC 2200PF 20% 400V
	C104	1-161-742-00	s	CERAMIC 2200PF 20% 400V
	C105	1-136-185-00	s	METALIZED 0.22 20% 250V
	C106	1-136-185-00	s	METALIZED 0.22 20% 250V
	C107	1-161-742-00	s	CERAMIC 2200PF 20% 400V
	C108	1-161-742-00	s	CERAMIC 2200PF 20% 400V
	C109	1-124-961-00	s	ELECT 220 20% 200V
	C110	1-124-023-00	s	ELECT 4.7 20% 350V
	C111	1-124-023-00	s	ELECT 4.7 20% 350V
	C112	1-124-549-00	s	ELECT 100 20% 10V
	C113	1-124-961-00	s	ELECT 220 20% 200V
	C114	1-124-549-00	s	ELECT 100 20% 10V
	C201	1-106-351-00	s	MYLAR 0.0022 5% 200V
	C202	1-106-351-00	s	MYLAR 0.0022 5% 200V
	C203	1-161-825-11	s	CERAMIC 220PF 10% 500V
	C204	1-161-825-11	s	CERAMIC 220PF 10% 500V
	C205	1-161-825-11	s	CERAMIC 220PF 10% 500V
	C206	1-161-825-11	s	CERAMIC 220PF 10% 500V

C207	1-123-357-00	s	ELECT 22 20% 50V
C209	1-106-351-00	s	MYLAR 0.0022 5% 200V
C210	1-136-153-00	s	MYLAR 0.01 5% 50V
C211	1-106-351-00	s	MYLAR 0.0022 5% 200V
C212	1-124-556-00	s	ELECT 2200 20% 16V
C213	1-124-556-00	s	ELECT 2200 20% 16V
C214	1-124-556-00	s	ELECT 2200 20% 16V
C215	1-124-556-00	s	ELECT 2200 20% 16V
C216	1-123-326-00	s	ELECT 3300 20% 16V
C217	1-123-332-00	s	ELECT 47 20% 50V

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No.	Parts No.	SP	Description
C651	1-124-445-00	s	ELECT 100 20% 16V
C652	1-130-591-11	s	MYLAR 3300PF 2% 100V
C653	1-136-141-00	s	MYLAR 1000PF 10% 50V
C654	1-136-165-00	s	MYLAR 0.1 5% 50V
C655	1-123-318-00	s	ELECT 33 16V

CN101	1-560-436-00	o	RECEPTACLE, 3P
	1-561-218-11	o	HOUSING, 3P
	1-561-432-00	o	CONTACT

CN201	1-560-438-00	o	RECEPTACLE, 5P
	1-561-424-11	o	HOUSING, 5P
	1-561-432-00	o	CONTACT

D101	8-719-300-00	s	LB-156
D201	8-719-908-00	s	ESAC33-02CS
D202	8-719-908-00	s	ESAC33-02CS
D203	8-719-900-93	s	V09C
D204	8-719-900-93	s	V09C

D205	8-719-815-55	s	1S1555
D206	8-719-100-61	s	RD11EB2
D208	8-719-101-67	s	RD7.5EL2
D209	8-719-100-30	s	RD5.1EB2
D210	8-719-100-30	s	RD5.1EB2

D651	8-719-200-02	s	10E-2
D652	8-719-100-70	s	RD15EB1
D653	8-719-815-55	s	1S1555

FB101	1-543-060-00	s	CORE
FB102	1-543-060-00	s	CORE
FB201	1-543-060-00	s	CORE
FB202	1-543-060-00	s	CORE
FB203	1-543-060-00	s	CORE

FB204	1-543-060-00	s	CORE
FB205	1-543-060-00	s	CORE
FB206	1-543-060-00	s	CORE
FB207	1-543-060-00	s	CORE
FB208	1-543-060-00	s	CORE

IC651	8-759-937-00	s	MB3759 (FUJITSU)
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L101	1-421-848-11	s	LINE FILTER
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L201	1-421-849-11	s	CHOKE, 2.4mH
L203	1-408-316-00	s	CHOKE
L204	1-421-850-11	s	CHOKE, 12
L205	1-421-329-00	s	CHOKE

Ref No.	Parts No.	SP	Description
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Q101	8-729-901-72	s	2SC3317
Q102	8-729-901-72	s	2SC3317
Q103	8-729-100-13	s	2SC2001
Q104	8-729-100-13	s	2SC2001
Q201	8-729-606-34	s	2SC2603-G

Q202	8-729-117-54	s	2SA1175-F
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R101	1-214-947-00	s	METAL 2.7M 1% 1/2W
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R102	1-205-636-11	s	CEMENT 3.3 5% 5W
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R103	1-246-529-00	s	CARBON 220k 5% 1/4W
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R104	1-246-529-00	s	CARBON 220k 5% 1/4W
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R105	1-212-934-00	s	METAL 1 5% 1/2W
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R106	1-247-700-11	s	NF CARBON 100 5% 1/4W
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R107	1-246-529-00	s	CARBON 220k 5% 1/4W
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R108	1-246-529-00	s	CARBON 220k 5% 1/4W
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R109	1-212-934-00	s	METAL 1 5% 1/2W
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R110	1-247-700-11	s	NF CARBON 100 5% 1/4W
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R201	1-206-475-00	s	METAL 33 5% 2W
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R202	1-535-369-00	s	SHUNT
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R203	1-213-151-00	s	METAL 4.7k 5% 5W
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R204	1-247-713-11	s	NF CARBON 1k 5% 1/4W
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R205	1-247-719-11	s	NF CARBON 3.3k 5% 1/4W
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R206	1-249-455-11	s	NF CARBON 4.7k 5% 1/4W
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R207	1-247-717-11	s	NF CARBON 2.2k 5% 1/4W
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R208	1-247-123-00	s	NF CARBON 470 5% 1/4W
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R209	1-247-704-11	s	NF CARBON 220 5% 1/4W
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R212	1-247-857-00	s	NF CARBON 220 5% 1/2W
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R651	1-249-425-11	s	NF CARBON 4.7k 5% 1/6W
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RV651	1-228-644-00	s	VAR, METAL 1k 0.3W
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T101	1-448-423-11	s	CONVERTER
T102	1-437-120-00	s	DRIVE

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No. Parts No. SP Description

VA-57A BOARD

A-6711-821-A o MOUNTED CIRCUIT BOARD, VA-57A

C1 1-161-021-11 s CERAMIC 0.047 10% 25V
 C2 1-124-499-11 s ELECT 1 20% 55V
 C3 1-161-021-11 s CERAMIC 0.047 10% 25V
 C4 1-124-499-11 s ELECT 1 20% 55V
 C5 1-161-021-11 s CERAMIC 0.047 10% 25V

C7 1-162-209-31 s CERAMIC 27PF 5% 50V
 C8 1-162-209-31 s CERAMIC 27PF 5% 50V
 C9 1-161-379-00 s CERAMIC 0.01 30% 16V
 C11 1-161-021-11 s CERAMIC 0.047 10% 25V
 C13 1-161-021-11 s CERAMIC 0.047 10% 25V

C14 1-161-021-11 s CERAMIC 0.047 10% 25V
 C15 1-161-379-00 s CERAMIC 0.01 30% 16V
 C17 1-161-379-00 s CERAMIC 0.01 30% 16V
 C18 1-161-379-00 s CERAMIC 0.01 30% 16V
 C19 1-161-379-00 s CERAMIC 0.01 30% 16V

C21 1-162-288-31 s CERAMIC 330PF 10% 50V
 C22 1-162-288-31 s CERAMIC 330PF 10% 50V
 C23 1-161-379-00 s CERAMIC 0.01 30% 16V
 C24 1-161-021-11 s CERAMIC 0.047 10% 25V
 C25 1-161-379-00 s CERAMIC 0.01 30% 16V

C28 1-161-021-11 s CERAMIC 0.047 10% 25V
 C29 1-161-055-00 s CERAMIC 0.022 10% 25V
 C30 1-161-021-11 s CERAMIC 0.047 10% 25V
 C31 1-161-379-00 s CERAMIC 0.01 30% 16V
 C33 1-161-021-11 s CERAMIC 0.047 10% 25V

C34 1-161-379-00 s CERAMIC 0.01 30% 16V
 C35 1-161-379-00 s CERAMIC 0.01 30% 16V
 C101 1-161-379-00 s CERAMIC 0.01 30% 16V
 C102 1-162-283-31 s CERAMIC 120PF 10% 50V
 C103 1-109-548-00 s MICA 360PF 5% 50V

C107 1-162-213-31 s CERAMIC 39PF 5% 50V
 C111 1-161-021-11 s CERAMIC 0.047 10% 25V
 C113 1-162-284-31 s CERAMIC 150PF 10% 50V
 C114 1-161-379-00 s CERAMIC 0.01 30% 16V
 C115 1-161-021-11 s CERAMIC 0.047 10% 25V

C118 1-162-209-31 s CERAMIC 27PF 5% 50V
 C123 1-161-055-00 s CERAMIC 0.022 10% 25V
 C124 1-162-215-31 s CERAMIC 47PF 5% 50V
 C128 1-161-379-00 s CERAMIC 0.01 30% 16V
 C129 1-161-021-11 s CERAMIC 0.047 10% 25V

C131 1-161-021-11 s CERAMIC 0.047 10% 25V
 C133 1-161-021-11 s CERAMIC 0.047 10% 25V
 C139 1-162-205-31 s CERAMIC 18PF 5% 50V
 C202 1-161-379-00 s CERAMIC 0.01 30% 16V
 C204 1-161-021-11 s CERAMIC 0.047 10% 25V

C206 1-161-021-11 s CERAMIC 0.047 10% 25V
 C208 1-161-379-00 s CERAMIC 0.01 30% 16V
 C209 1-161-379-00 s CERAMIC 0.01 30% 16V
 C210 1-161-021-11 s CERAMIC 0.047 10% 25V
 C215 1-161-021-11 s CERAMIC 0.047 10% 25V

Ref No. Parts No. SP Description

C218 1-162-283-31 s CERAMIC 120PF 10% 50V
 C219 1-131-344-00 s ELECT 0.033 10% 25V
 C223 1-162-294-31 s CERAMIC 0.001 10% 50V
 C224 1-131-344-00 s ELECT 0.033 10% 25V
 C226 1-161-021-11 s CERAMIC 0.047 10% 25V

C228 1-162-281-31 s CERAMIC 91PF 10% 50V
 C233 1-161-379-00 s CERAMIC 0.01 30% 16V
 C134 1-162-282-31 s CERAMIC 100PF 10% 50V
 C235 1-161-021-11 s CERAMIC 0.047 10% 25V
 C237 1-161-021-11 s CERAMIC 0.047 10% 25V

C239 1-161-379-00 s CERAMIC 0.01 30% 16V
 C241 1-162-290-31 s CERAMIC 470PF 10% 50V
 C242 1-162-292-31 s CERAMIC 680PF 10% 50V
 C243 1-162-290-31 s CERAMIC 470PF 10% 50V
 C245 1-161-379-00 s CERAMIC 0.01 30% 16V

C249 1-131-404-00 s ELECT 0.22 10% 25V
 C250 1-161-021-11 s CERAMIC 0.047 10% 25V
 C252 1-162-282-31 s CERAMIC 100PF 10% 50V
 C254 1-124-499-11 s ELECT 1 20% 50V
 C255 1-161-021-11 s CERAMIC 0.047 10% 25V

C256 1-161-021-11 s CERAMIC 0.047 10% 25V
 C257 1-162-203-31 s CERAMIC 15PF 5% 50V
 C259 1-131-361-00 s TANTALUM 2.2 10% 16V
 C261 1-123-382-00 s ELECT 3.3 20% 50V
 C263 1-161-021-11 s CERAMIC 0.047 10% 25V

C265 1-161-021-11 s CERAMIC 0.047 10% 25V
 C271 1-161-379-00 s CERAMIC 0.01 30% 16V
 C303 1-161-379-00 s CERAMIC 0.01 30% 16V
 C304 1-161-379-00 s CERAMIC 0.01 30% 16V
 C305 1-161-021-11 s CERAMIC 0.047 10% 25V

C308 1-161-021-11 s CERAMIC 0.047 10% 25V
 C310 1-161-379-00 s CERAMIC 0.01 30% 16V
 C311 1-162-205-31 s CERAMIC 18PF 5% 50V
 C312 1-162-218-31 s CERAMIC 62PF 5% 50V
 C313 1-162-282-31 s CERAMIC 100PF 10% 50V

C314 1-162-205-31 s CERAMIC 18PF 5% 50V
 C317 1-162-281-31 s CERAMIC 91PF 10% 50V
 C318 1-161-379-00 s CERAMIC 0.01 30% 16V
 C320 1-161-379-00 s CERAMIC 0.01 30% 16V
 C901 1-162-292-31 s CERAMIC 680PF 10% 50V

C902 1-162-292-31 s CERAMIC 680PF 10% 50V
 C907 1-162-282-31 s CERAMIC 100PF 10% 50V
 C908 1-162-282-31 s CERAMIC 100PF 10% 50V
 C919 1-162-282-31 s CERAMIC 100PF 10% 50V
 C920 1-162-282-31 s CERAMIC 100PF 10% 50V

CN1002 1-563-356-11 s MULTI 8P "TV"
 CN1003 1-563-354-11 s BNC "VIDEO OUT"
 CN1004 1-563-353-11 s JACK, PIN (RCA) 2P
 "AUDIO CH-1 OUT"
 CN1005 1-563-353-11 s JACK, PIN (RCA) 2P
 "AUDIO CH-2 OUT"
 CN1006 1-563-989-11 s JACK, PIN (RCA) 1P
 "AUDIO MONITOR"

CN1007 1-563-354-11 s BNC "EXT SYNC IN"

CV1 1-141-276-00 s TRIMMER

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No. Parts No. SP Description

D1 8-719-911-19 s 1SS119
 D101 8-719-911-19 s 1SS119
 D102 8-719-911-19 s 1SS119
 D103 8-719-911-19 s 1SS119
 D203 8-719-911-19 s 1SS119

D204 8-719-911-19 s 1SS119
 D205 8-719-911-19 s 1SS119
 D206 8-719-911-19 s 1SS119
 D207 8-719-911-19 s 1SS119
 D301 8-719-100-21 s RD3.9E-B

D302 8-719-911-19 s 1SS119
 D303 8-719-911-19 s 1SS119
 D951 8-719-911-19 s 1SS119
 D952 8-719-200-02 s 10E-2

DL1 1-415-242-00 s DELAY LINE
 DL2 1-415-373-11 s DELAY LINE, 1H

FL1 1-235-807-11 s HIGH PASS
 FL2 1-235-808-11 s LOW PASS
 FL3 1-235-808-11 s LOW PASS
 FL4 1-235-811-11 s BAND PASS

IC1 8-751-340-10 s CX134A (SONY)
 IC2 8-751-350-10 s CX135 (SONY)
 IC3 8-751-880-00 s CX188 (SONY)
 IC4 8-759-908-59 s CX859 (SONY)
 IC5 8-759-001-16 s HD10116L (HITACHI)

IC6 8-759-200-60 s TA7060AP (TOSHIBA)
 IC7 8-759-240-01 s TC4001BP (TOSHIBA)
 IC901 8-759-800-66 s LA3161 (SANYO)
 IC902 8-759-800-36 s LA3160 (SANYO)

L3 1-410-071-11 s 10 uH
 L5 1-410-071-11 s 10 uH
 L7 1-410-119-11 s 1 uH
 L211 1-410-067-21 s 4.7 uH
 L212 1-410-067-21 s 4.7 uH

L213 1-410-092-21 s 27 uH
 L901 1-410-119-11 s 1 uH

LV1 1-425-880-00 s BURST AMP
 LV2 1-426-188-11 s BPT
 LV3 1-426-190-11 s BPT

Ref No. Parts No. SP Description

Q1 8-729-800-43 s 2SK152-3
 Q2 8-729-800-43 s 2SK152-3
 Q3 8-729-600-27 s 2SC634SP
 Q4 8-729-603-50 s 2SC403SP
 Q5 8-729-603-50 s 2SC403SP

Q7 8-729-600-27 s 2SC634SP
 Q8 8-729-600-27 s 2SC634SP
 Q9 8-729-600-27 s 2SC634SP
 Q10 8-729-117-54 s 2SA1175
 Q11 8-729-600-27 s 2SC634SP

Q12 8-729-201-05 s 2SC2878
 Q101 8-729-603-50 s 2SC403SP
 Q102 8-729-117-54 s 2SA1175
 Q103 8-729-603-50 s 2SC403SP
 Q104 8-729-603-50 s 2SC403SP

Q105 8-729-603-50 s 2SC403SP
 Q106 8-729-603-50 s 2SC403SP
 Q107 8-729-603-50 s 2SC403SP
 Q108 8-729-603-50 s 2SC403SP
 Q109 8-729-603-50 s 2SC403SP

Q110 8-729-603-50 s 2SC403SP
 Q111 8-729-603-50 s 2SC403SP
 Q112 8-729-117-54 s 2SA1175
 Q113 8-729-600-27 s 2SC634SP
 Q114 8-729-603-50 s 2SC403SP

Q115 8-729-603-50 s 2SC403SP
 Q116 8-729-603-50 s 2SC403SP
 Q117 8-729-603-50 s 2SC403SP
 Q201 8-729-603-50 s 2SC403SP
 Q202 8-729-603-50 s 2SC403SP

Q203 8-729-603-50 s 2SC403SP
 Q204 8-729-201-05 s 2SC2878
 Q205 8-729-603-50 s 2SC403SP
 Q206 8-729-600-27 s 2SC634SP
 Q207 8-729-600-27 s 2SC634SP

Q208 8-729-600-27 s 2SC634SP
 Q209 8-729-603-50 s 2SC403SP
 Q210 8-729-603-50 s 2SC403SP
 Q211 8-729-117-54 s 2SA1175
 Q212 8-729-600-27 s 2SC634SP

Q213 8-729-600-27 s 2SC634SP
 Q251 8-729-201-05 s 2SC2878
 Q301 8-729-117-54 s 2SA1175
 Q302 8-729-113-34 s 2SB733-5
 Q303 8-729-600-27 s 2SC634SP

Q304 8-729-600-27 s 2SC634SP
 Q305 8-729-600-27 s 2SC634SP
 Q306 8-729-603-50 s 2SC403SP
 Q307 8-729-201-05 s 2SC2878
 Q308 8-729-600-27 s 2SC634SP

1) Q351 8-729-117-54 s 2SA1175
 Q501 8-729-603-50 s 2SC403SP
 Q502 8-729-603-50 s 2SC403SP
 Q901 8-729-600-27 s 2SC634SP
 Q902 8-729-600-27 s 2SC634SP

Q903 8-729-600-27 s 2SC634SP
 Q904 8-729-600-27 s 2SC634SP
 Q952 8-729-600-27 s 2SC634SP

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref No.	Parts No.	SP	Description
R230	1-247-838-00	s	CARBON 2K 5% 1/4W

RV1	1-228-991-00	s	VAR, CARBON 2.2K
RV2	1-228-991-00	s	VAR, CARBON 2.2K
RV3	1-228-991-00	s	VAR, CARBON 2.2K
RV4	1-228-991-00	s	VAR, CARBON 2.2K
RV5	1-228-991-00	s	VAR, CARBON 2.2K

RV6	1-228-991-00	s	VAR, CARBON 2.2K
RV7	1-228-990-00	s	VAR, CARBON 1K
RV8	1-228-993-00	s	VAR, CARBON 4.7K
RV9	1-228-993-00	s	VAR, CARBON 4.7K
RV10	1-228-993-00	s	VAR, CARBON 4.7K

RV11	1-228-995-00	s	VAR, CARBON 22K
RV12	1-228-990-00	s	VAR, CARBON 1K
RV13	1-228-995-00	s	VAR, CARBON 22K
RV501	1-228-991-00	s	VAR, CARBON 2.2K
RV901	1-228-991-00	s	VAR, CARBON 2.2K

RV902	1-228-991-00	s	VAR, CARBON 2.2K
RV903	1-228-994-00	s	VAR, CARBON 10K
RV904	1-228-994-00	s	VAR, CARBON 10K

S1006	1-516-781-XX	s	SLIDE "COLOR LOCK"
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T1	1-426-018-00	s	AF
T2	1-426-018-00	s	AF

X1	1-567-504-11	s	OSC
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Ref No.	Parts No.	SP	Description
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FRAME

A-6709-604-A	s	HEAD DRUM ASSY DUH-38B-R
A-6709-561-A	s	UPPER DRUM ASSY DUR-38-R

△ 1-413-248-11	s	SWITCHING REGULATOR UR-14 (For UC)
1-413-249-12	s	SWITCHING REGULATOR UR-14E (For EK)
1-413-259-11	s	SWITCHING REGULATOR ZSSP435GA (For UC)

△ CN1001	1-509-546-00	s	3P INLET
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CN1002	1-563-356-11	s	CONNECTOR, MULTI 8P "TV"
CN1003	1-563-354-11	o	BNC "VIDEO OUT-1"
CN1004	1-563-354-11	o	BNC "VIDEO OUT-2"
CN1005	1-563-354-11	o	BNC "RF OFF TAPE OUT"

CN1007	1-563-354-11	o	BNC "EXT SYNC IN"
CN1009	1-563-989-11	s	JACK, PIN (RCA) 1P "AUDIO MONITOR"
CN1011	1-560-403-00	s	RECEPTACLE 10P "RF MOD"
CN1012	1-555-977-00	s	RECEPTACLE "RF OUT"
CN1014	1-563-355-11	s	JACK "REMOTE"

CN1017	1-563-030-21	s	CONNECTOR XLR 3P MALE "AUDIO LINE OUT CH-1"
CN1018	1-563-030-21	s	CONNECTOR XLR 3P MALE "AUDIO LINE OUT CH-2"

CS1001	1-586-633-00	s	CONDENSATION SENSOR
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PM1001	1-454-415-11	s	SOLENOID, PLUNGER 12V 9.5/52 OHM "TAKE-UP IDLER"
PM1002	1-454-417-31	s	SOLENOID, PLUNGER 12V 12/90 OHM "TAKE-UP BRAKE"
PM1004	1-454-415-11	s	SOLENOID, PLUNGER 12V 9.5/52 OHM "SUPPLY IDLER"
PM1005	1-454-417-31	s	SOLENOID, PLUNGER 12V 12/90 OHM "SUPPLY BRAKE"
PM1007	1-454-417-31	s	SOLENOID, PLUNGER 12V 12/90 OHM "SEARCH"
PM1008	1-454-416-31	s	SOLENOID, PLUNGER 12V, 7/35 OHM "PINCH"

M1001	8-835-258-02	s	DC, BHF-1915B "CAPSTAN"
M1005	8-835-179-01	s	DC, MCB2B15 "CASSETTE COMPARTMENT"
M1006	8-835-178-01	s	DC FN30-T26N1E "REEL"

RV1004	1-237-215-11	s	VAR, CARBON 100k "TRACKING"
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△ S1001	1-570-117-11	s	SWITCH, ROCKER "AC POWER"
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1-509-898-00	s	RECEPTACLE	
1-509-910-00	s	HOUSING, CONNECTOR (2P)	
1-561-218-00	o	CONNECTOR SOCKET, 3P	
1-561-432-00	s	CONNECTOR CONTACT	
S1002	1-552-271-00	s	SWITCH, SLIDE "TIMER"
S1004	1-516-781-XX	s	SLIDE "COLOR LOCK"

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

15-4. PACKING MATERIAL AND ACCESSORIES
(SUPPLIED)

Parts No. SP Description

△ 1-551-812-00 s CORD, POWER (For UC)
1-556-760-11 s CORD, POWER (3 CORE)(For EK)

3-662-364-00 s BAG, PROTECTION
3-701-630-00 s BAG, POLYETHYLENE (For UC)
3-718-355-01 o COVER, RF (For EK)
3-718-359-01 o CUSHION (UPPER)
3-718-360-01 o CUSHION (LOWER)

3-718-425-01 o INDIVIDUAL CARTON

△ 3-786-032-11 s MANUAL, INSTRUCTION (For EK)
3-786-032-21 s MANUAL, INSTRUCTION (For UC)

15-5. FIXTURE

Parts No. SP Description

J-6001-820-A o DRUM ECCENTRICITY GAUGE (3)
J-6001-830-A o DRUM ECCENTRICITY GAUGE (2)
J-6001-840-A o DRUM ECCENTRICITY GAUGE (1)
J-6001-930-A o DRUM ECCENTRICITY GAUGE (4)
J-6009-830-A o FLATNESS PLATE

J-6026-240-A o ADJUSTMENT DRIVER
J-6130-010-A o REEL TABLE HEIGHT CHECK BASE JIG
J-6130-020-A o REEL TABLE HEIGHT CHECK JIG
J-6153-020-A o DIHEDRAL ADJUSTMENT DRIVER
J-6150-140-A o ECCENTRICITY SCTEWDRIIVER 6 MM DIA.

J-6153-580-A o PINCH LEVER ADJUSTMENT JIG
Y-2031-001-0 o CLEANING FLUID
2-034-697-00 o CLEANING PIECE
3-702-216-01 o BACK TENSION ADJUSTMENT JIG
7-700-736-01 o L-SHAPED HEXAGONAL WRENCH
(across flat has 1.27mm)

7-700-736-05 o L-SHAPED HEXAGONAL WRENCH
(across flat has 1.5mm)
7-661-018-01 o SONY OIL
7-732-050-20 o TENISON SCALE (50g full scale)
7-732-050-30 o TENSION SCALE (100g full scale)
7-732-050-40 o TENSION SCALE (200g full scale)

7-732-050-50 o TENSION SCALE (500g full scale)
8-899-999-53 o TORQUE MEASUREMENT TAPE
8-960-015-04 o ALIGNMENT TAPE RR5-3 SA
8-960-020-62 o ALIGNMENT TAPE RR5-2SB PAL
8-960-035-61 o ALIGNMENT TAPE RR5-2SC PAL

8-960-036-02 o ALIGNMENT TAPE RR2-1SD PAL
8-960-036-80 o ALIGNMENT TAPE RR5-1SD PAL
9-911-053-00 o THICKNESS GAUGE

12 168 24
60 40